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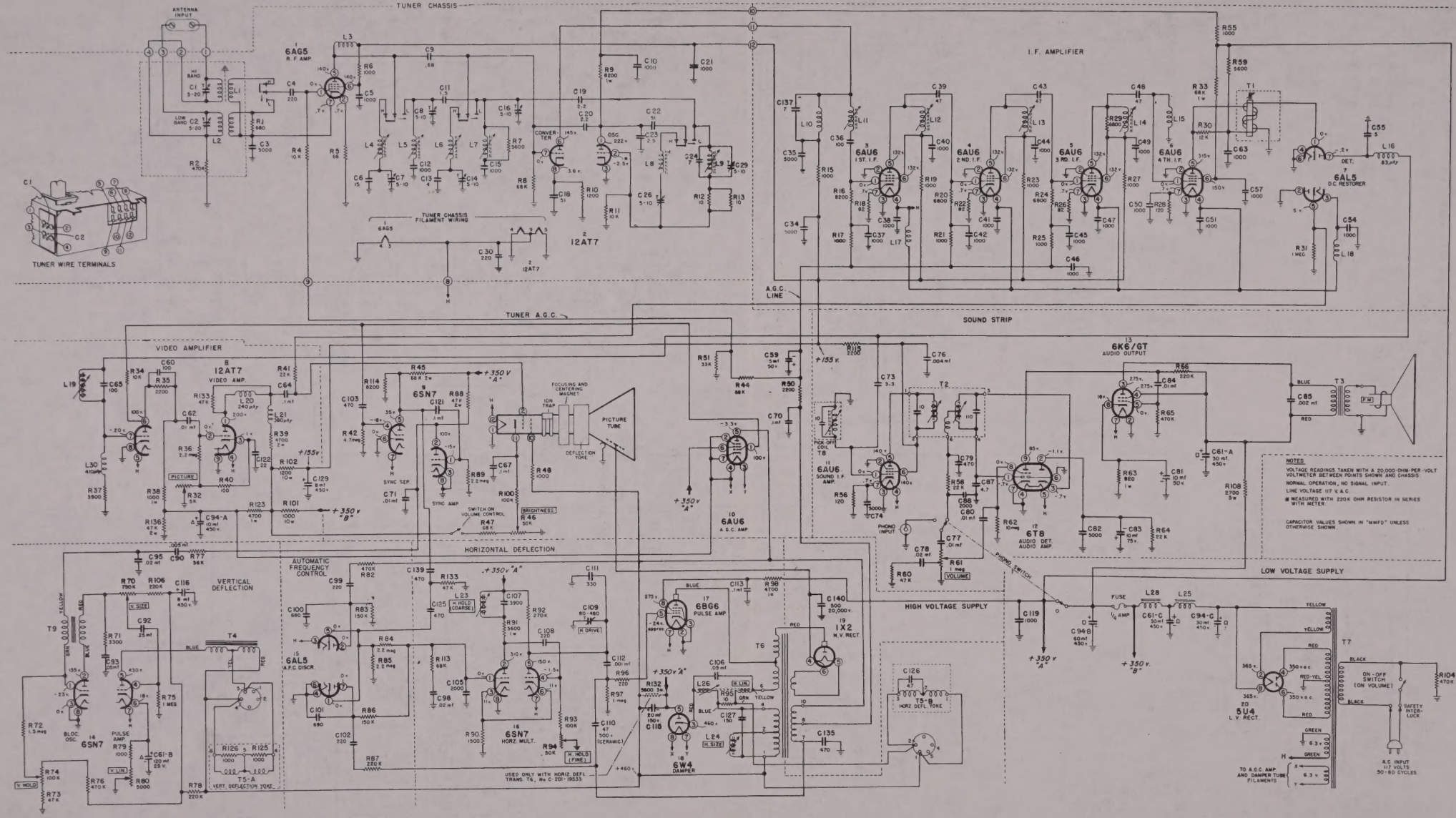
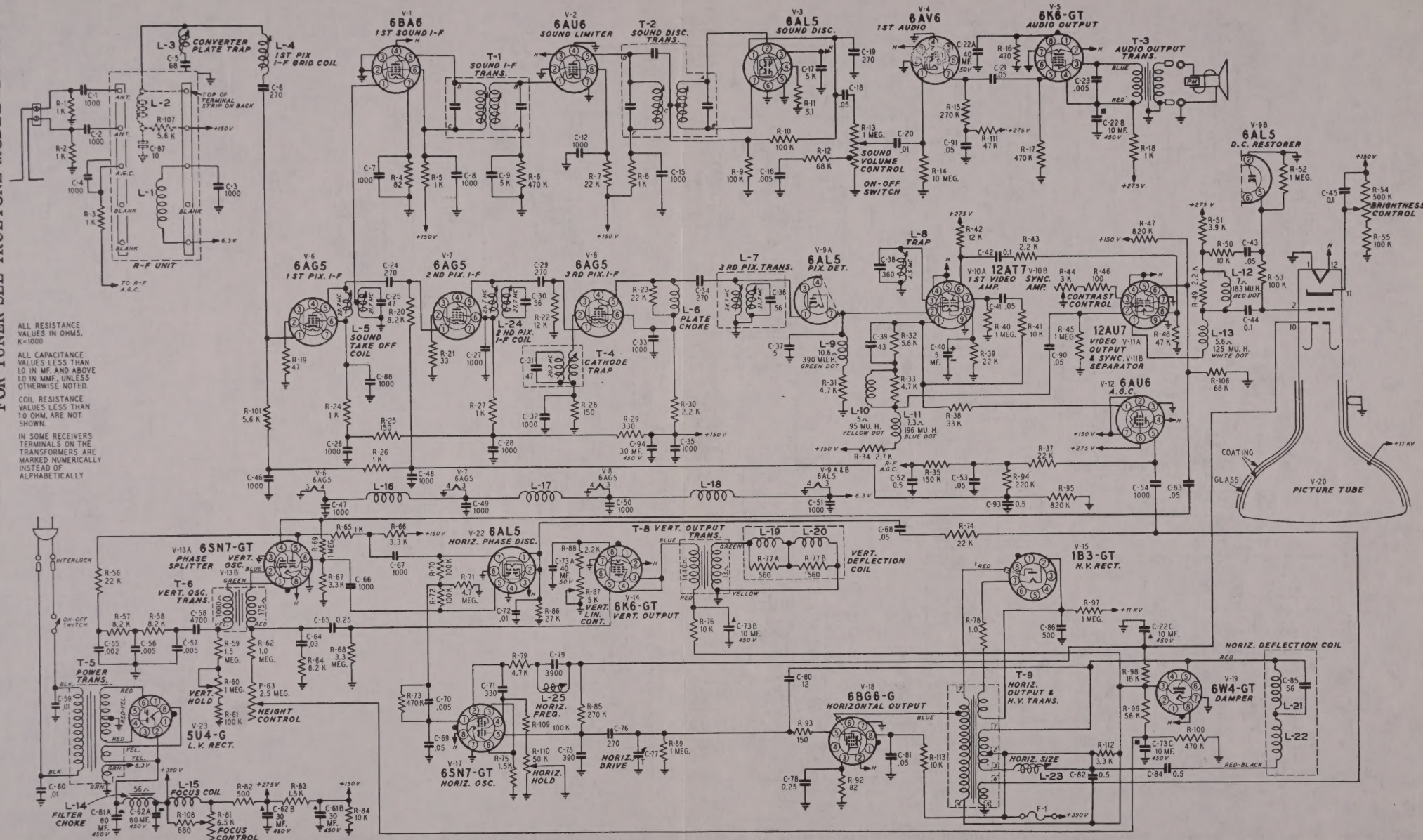


NOTE: Resistor R-132 and T-6 note do not apply to this receiver. The Cooperation of the Manufacturer of This Receiver Makes It Possible To Bring You This Service. AIRLINE MODEL 05BR-3041A

FOR TUNER SEE TRUETONE MODEL 2D1088A.



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TRUETONE MODEL 2D1088B.

PRELIMINARY DATA
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SET 145 FOLDER 1A

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AIRLINE MODELS 15BR-1543A, 15BR-1544A

AIRLINE MODELS 15BR-1543A, 15BR-1544A

AIRLINE MODELS 15BR-1543A, 15BR-1544A

AIRLINE MODEL 15BR-1544A

TRADE NAME	Airline, Models 15BR-1543A, B, 15BR-1544A, B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AV6 or 12AT6 Det.-AVC-AF, 50C5 Power Output, 35Z5GT Rectifier. (25Z6 Rectifier, Series B)
POWER SUPPLY	110-120 Volts AC-DC
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn gang fully closed and set the right hand edge of the pointer carriage even with the last dot at the upper left end of the dial backplate.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading Use an insulated alignment screwdriver for adiusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1Mfd.	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum putput. IF AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reducehum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 15BR-1543A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Detector-AVC-AF Amplifier	12AV6	12AV6	7BT	
B	Detector-AVC-AF Amplifier	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35Z5GT	35Z5GT	6AD	25Z6 in Series B

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	8C-17391	PRS150/50-		BRD5315A		TVA-2450	Filter
B	30	150		30					Filter
C2	.05	200	8D-10770	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.005	400		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling *
C4A	220			SI220	D6-221		GP2K-221		Diode RF Filter
B	.002		♦A201-14397	P688-002	D6-202	PTE6D2	GP2-333-202	♦34C3	Audio Coupling
C	.005			P688-005	D6-502	PTE6D5	GP2-333-502		Audio Coupling
D	220			SI220	D6-221		GP2K-221		AF Amp. Plate
E	125								Output Grid †
C5	.02	400	8D-10774	P488-02	DF-203	PTE4S2		4TM-S2	Output Plate
C6	.047	400	8J-16081	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C7	.18	400	8D-11111	684-2		GT4P2			Line Isolation

* Not used in all models.
♦ Items C4A, C4B, C4C, C4D are combined in one unit.
† Used in models having combination Resistor-Capacitor unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	10A-19616	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SW-B	Not req.	Attach to R1A per instructions

RESISTORS

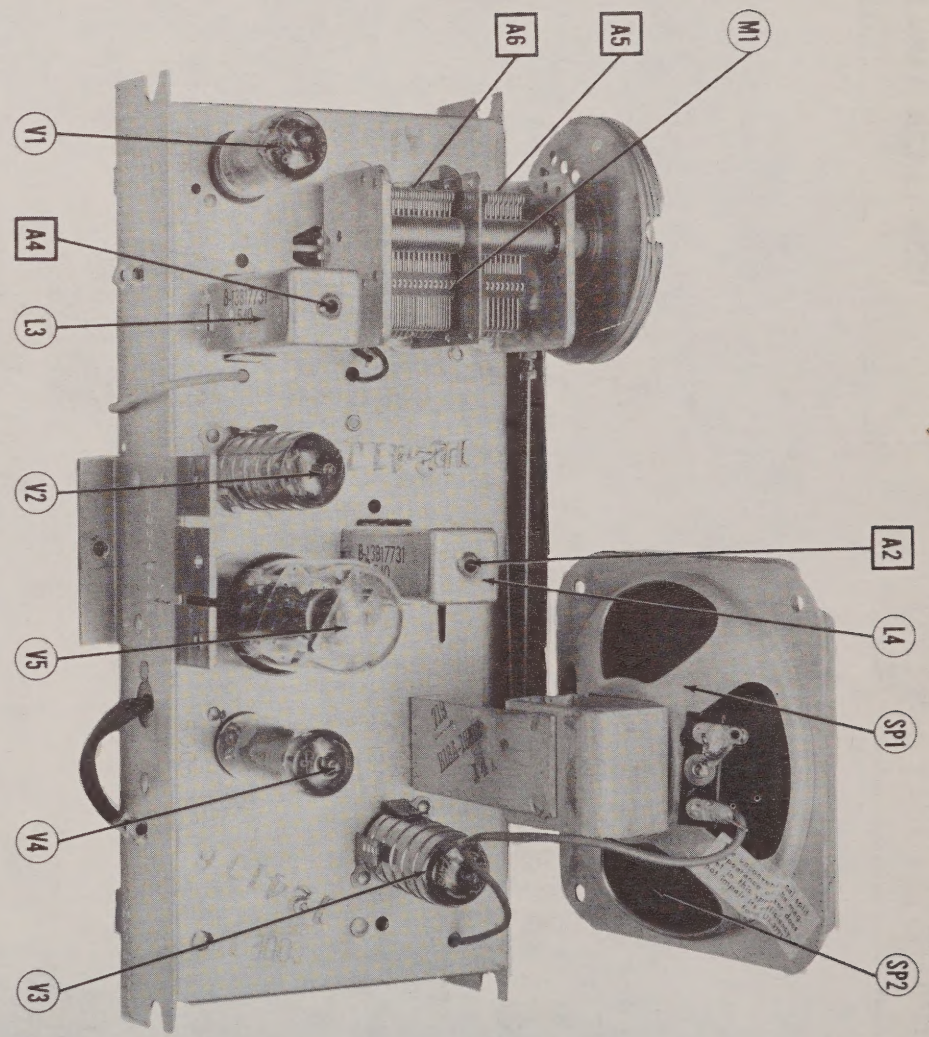
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	47KΩ	½	9B1-82	BTS-47K	Osc. Grid
R3	100Ω	½		BTS-100	IF Amp. Cathode - See Note
R4	3.3Meg	½	9B1-34	BTS-3.3Meg	AVC Network
R5	6.8Meg	½		BTS-6.8Meg	AF Amp. Grid
R6	470KΩ	½		BTS-470K	AF Amp. Plate
R7	470KΩ	½		BTS-470K	Output Grid
R8	150Ω	½	9B1-52	BTS-150	Output Cathode
R9	1000Ω	1	9B2-62	BW-1-1000	Filter
R10	27Ω	½	9B1-43		Surge Limiter
R11	220KΩ	½	9B1-27	BTS-220K	Isolation

Note - Some models use 220Ω Resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2kΩ	3Ω	170Ω	.5Ω	12C17595	A-3332	A-3025	RO-2 ①	① One new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

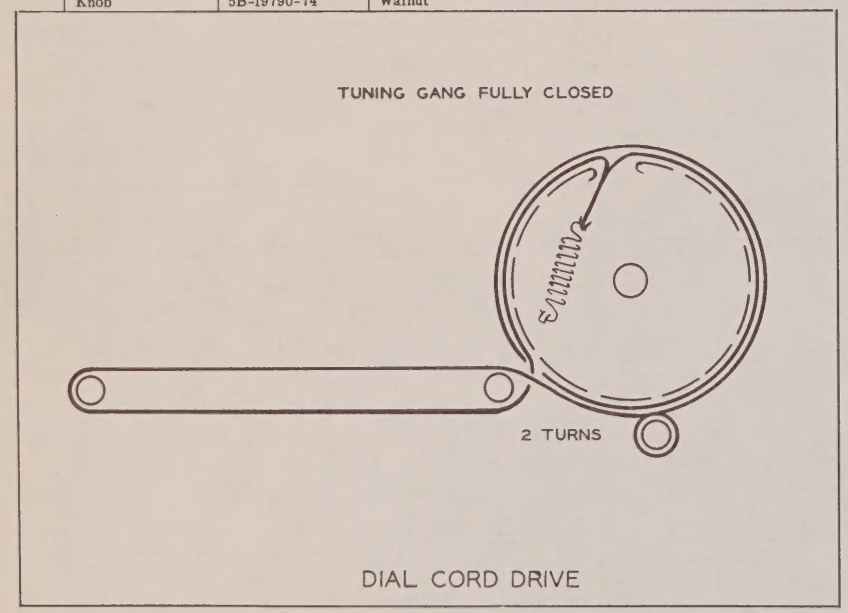
ITEM No.	RATINGS		REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST113		
SP1	PM	3Ω	18A19618	Model P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.2Ω		13E-19621		
L2	Osc. Coil	.9Ω	6.2Ω	13D-17583		
L3	1st IF	15Ω	15Ω	13B-17731		
L4	2nd IF	15Ω	15Ω	13B-17731		

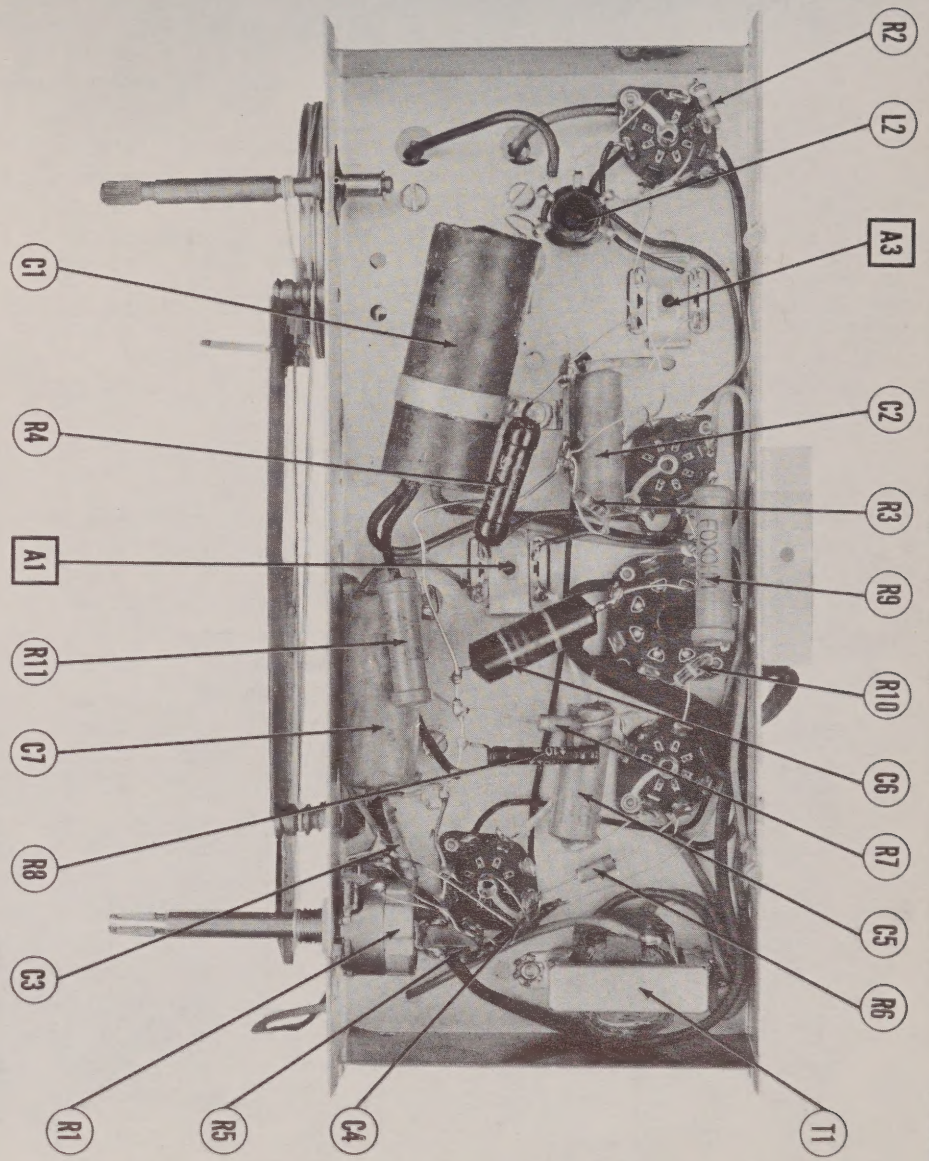
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M1	2 Gang Var. Cap.	8A-17377	(21-465MMF, 27-157MMF)
	Dial Pointer	2G-19620	
	Dial Scale	6D-19625	
	Cabinet	5C-19532-9	Ivory
	Cabinet	5C-19532-36	Walnut
	Knob	5B-19790-8	Ivory
	Knob	5B-19790-74	Walnut

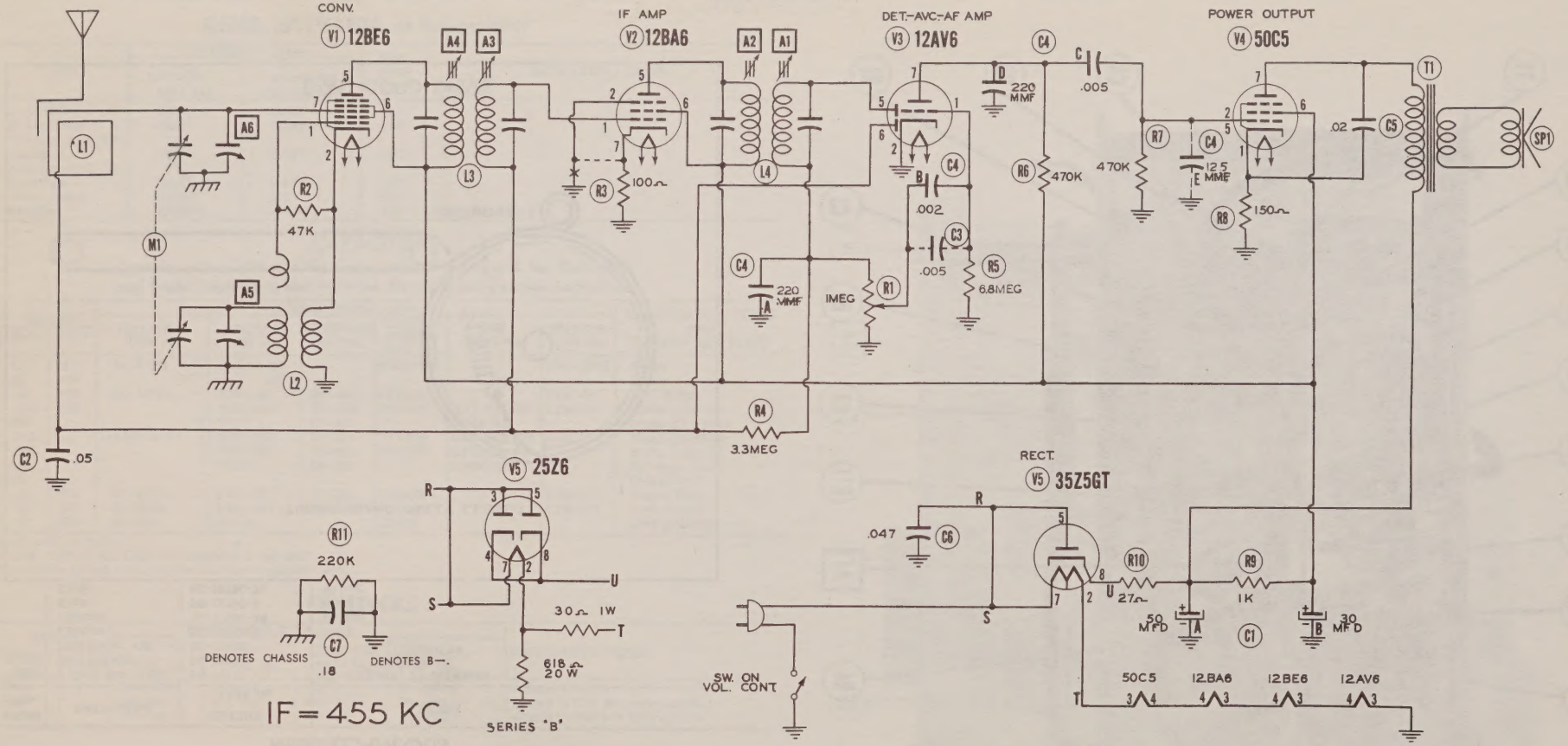


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



AIRLINE MODEL 15BR-1543A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	§-6.6VDC	0V	12VAC	24VAC	95VDC	95VDC	-.5VDC	
V 2	12BA6	-.5VDC	0V	24VAC	36VAC	95VDC	95VDC	1.1VDC	
V 3	12AV6	-.6VDC	0V	0V	12VAC	-2.4VDC	0V	56VDC	
V 4	50C5	6.3VDC	0V	86VAC	36VAC	0V	95VDC	110VDC	
V 5	35Z5GT	0V	117VAC	105VAC	95VDC	117VAC	115VDC	86VAC	115VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	47KΩ	.9Ω	12Ω	24Ω	†1KΩ	†1KΩ	4.3Meg	
V 2	12BA6	4.3Meg	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	100Ω	
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	1Meg	4.3Meg	†470KΩ	
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	†1KΩ	†200Ω	
V 5	35Z5GT	Inf.	12IΩ	110Ω	†1KΩ	12IΩ	†27Ω	86Ω	50KΩ

† MEASURED FROM PIN 8 OF V5

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE
MODELS 15WG-3050A, B

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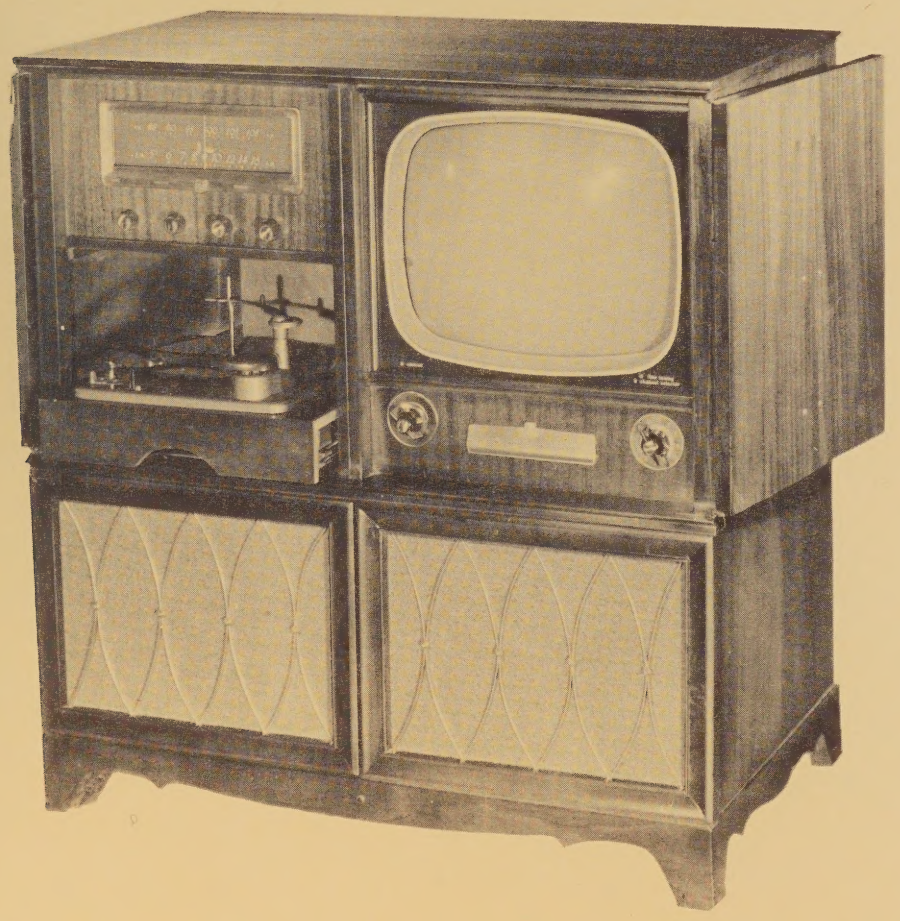

MODEL 15WG-3050A

AIRLINE
MODELS 15WG-3050A, B

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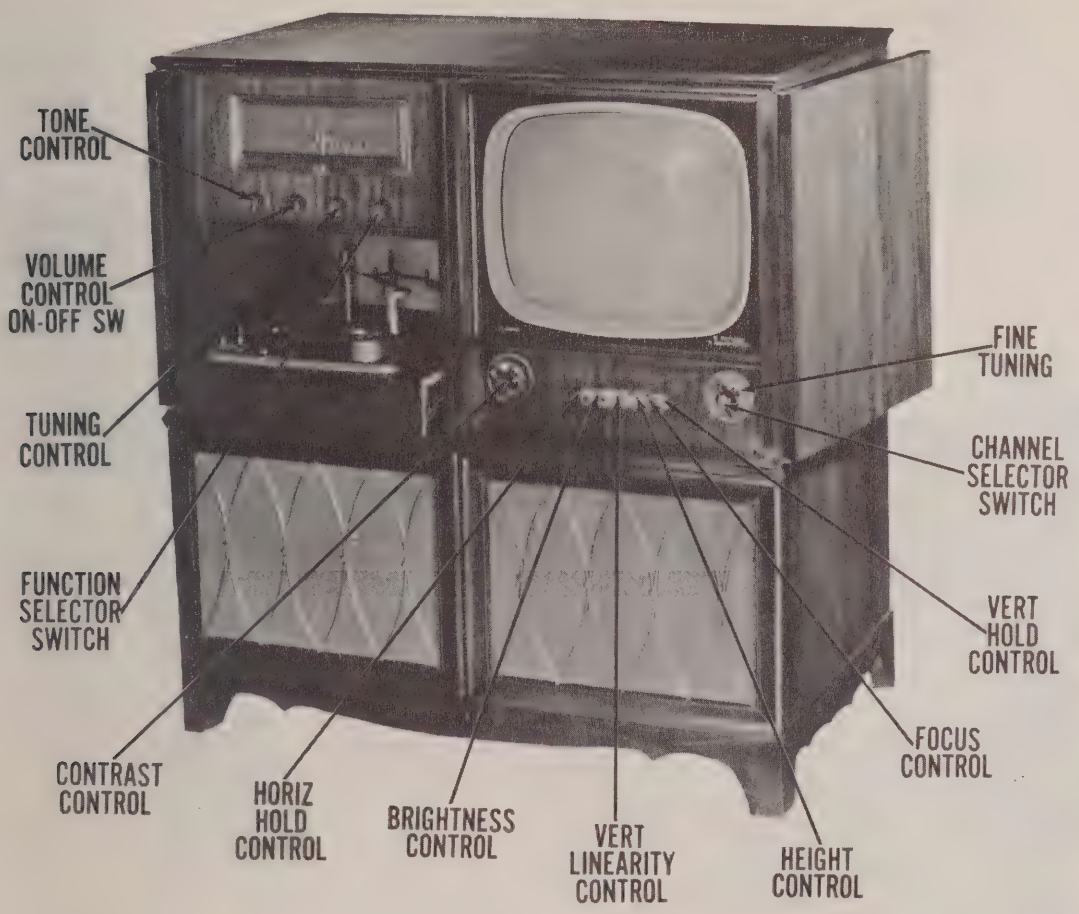
DATE 9-51 SET 145 FOLDER 3

AIRLINE
MODELS 15WG-3050A, B



AIRLINE MODEL 15WG-3050A

TRADE NAME	Airline, Models 15WG-3050A, B		
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.		
TYPE SET	TV-AM-FM-Phono Combination		
TUBES	Twenty nine		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATINGS (TV)	2.5 Amp. at 117 Volts AC
		(Radio)	.575 Amp. at 117 Volts AC
TUNING RANGE—	TV Channels 2 thru 13 AM 540-1600KC FM 88-108MC		

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RECORD CHANGER UNIT - MODEL 15WG-3050A - AIRLINE TYPE W-28A175 -
SEE SIMILAR MODEL IN PHOTOFACT FOLDER # 14 SET # 135
RECORD CHANGER UNIT - MODEL 15WG-3050B - AIRLINE TYPE V-28A172 -
SEE SIMILAR MODEL IN PHOTOFACT FOLDER # 16 SET # 102

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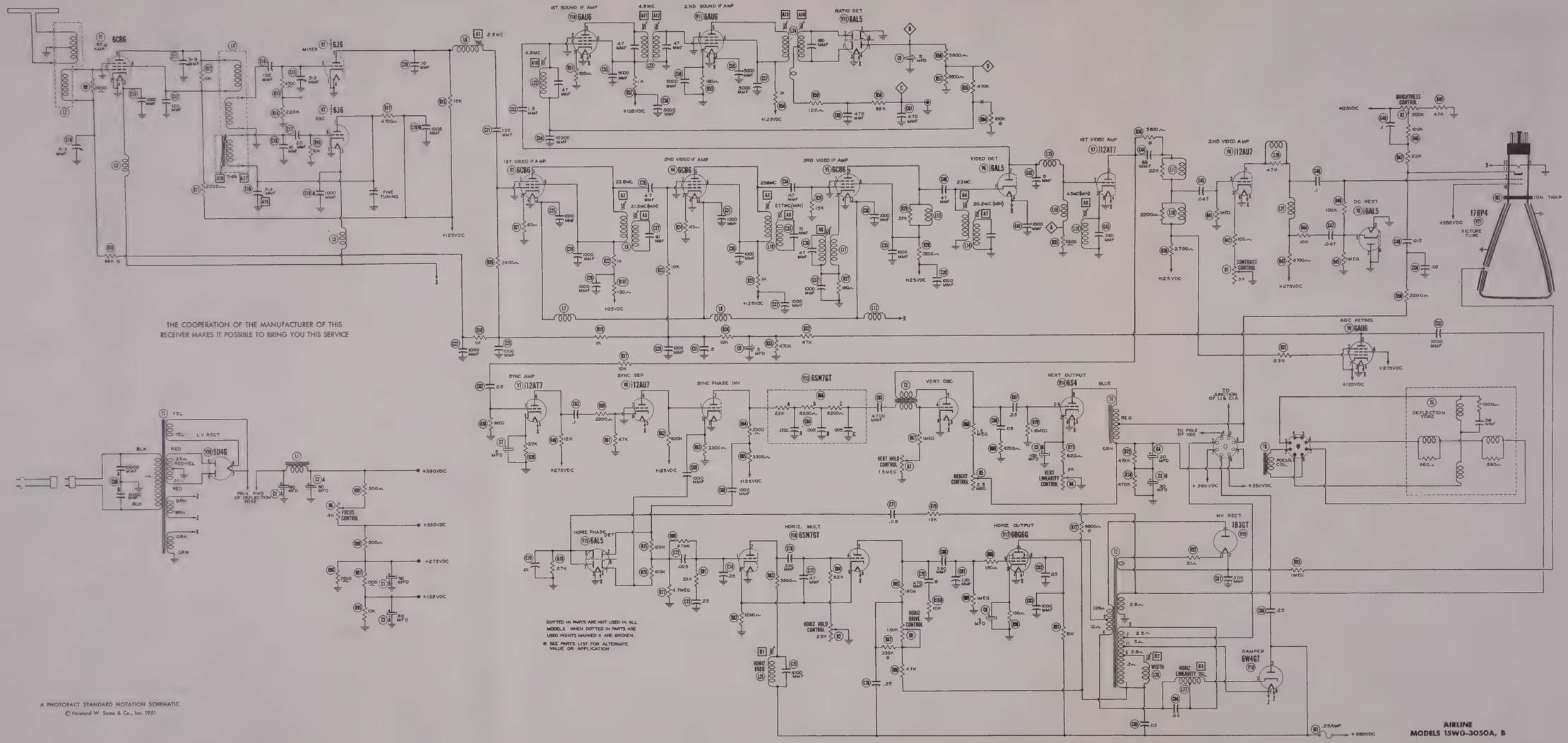
MODELS 15WG-3050A, B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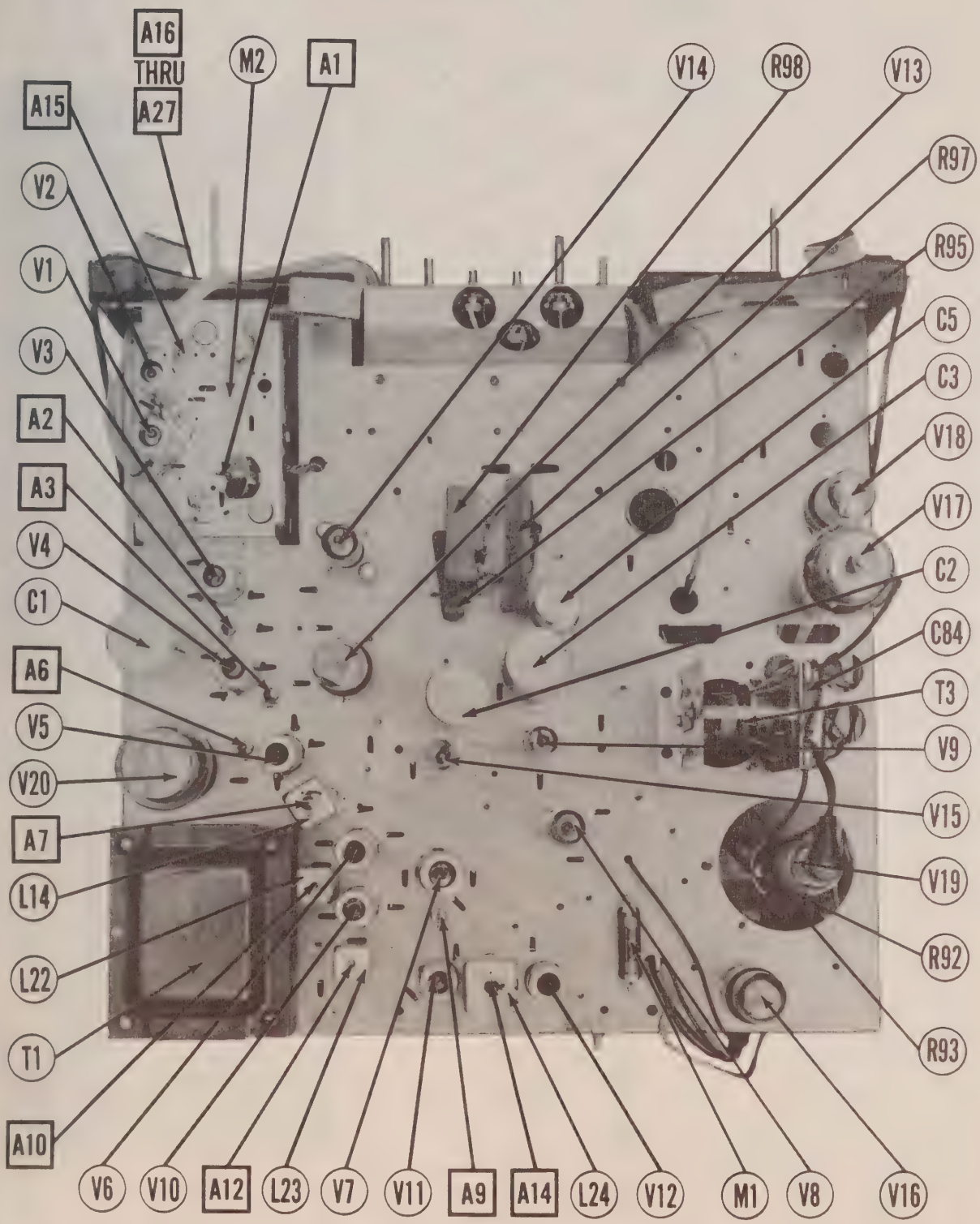
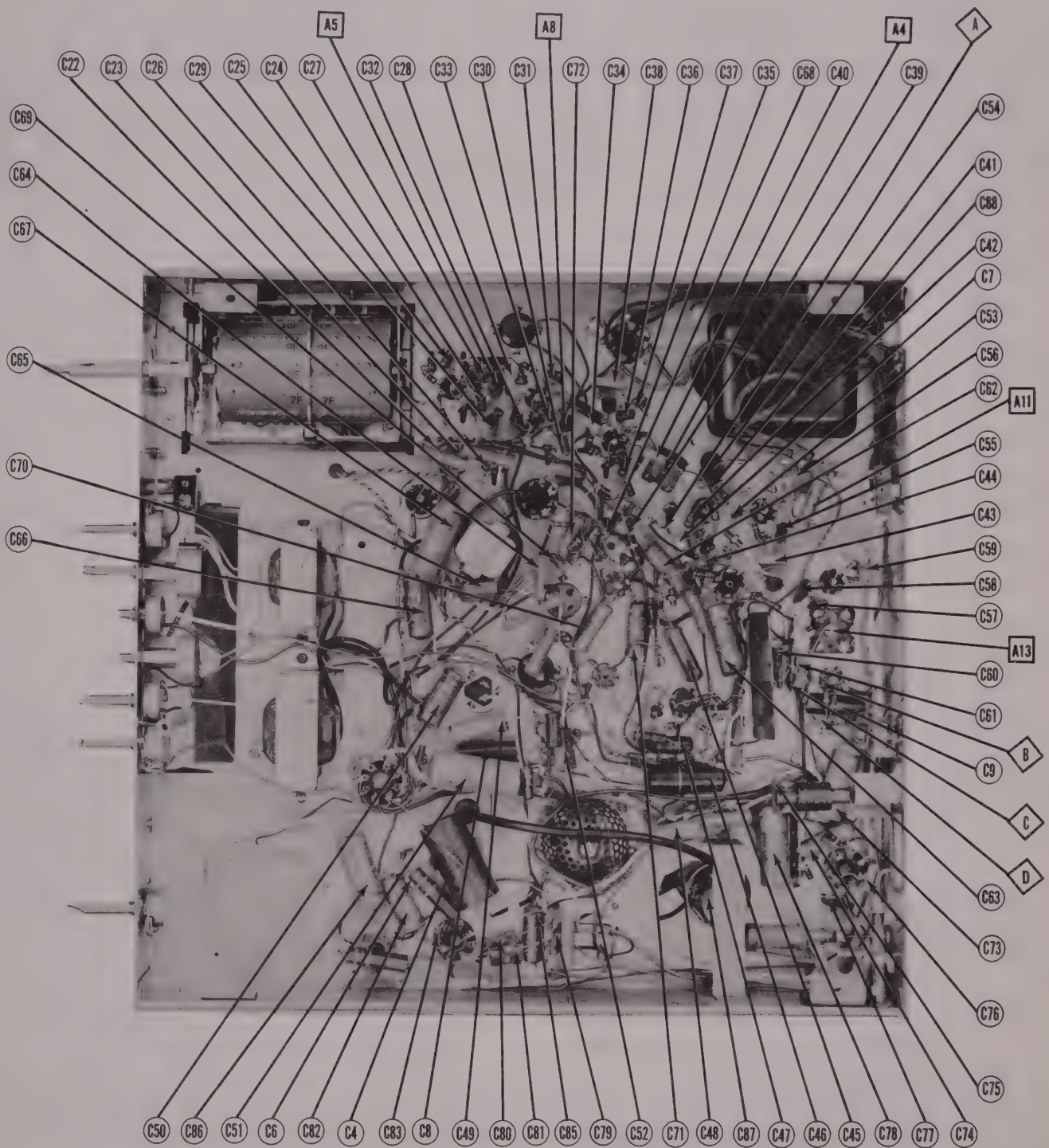
AIRLINE
MODELS 15WG-3050A, B

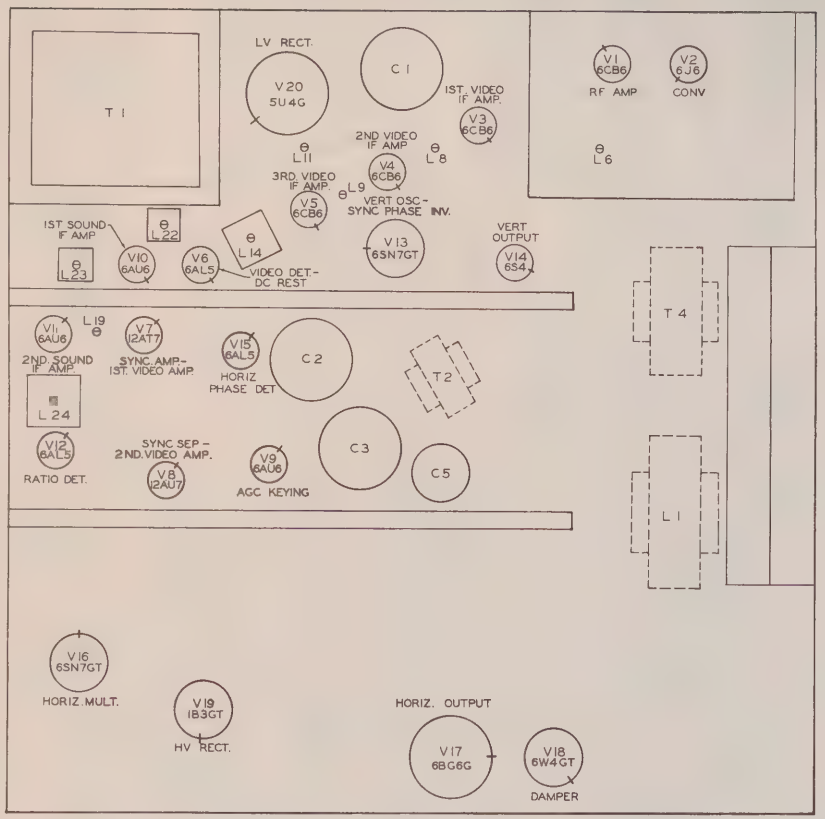
AIRLINE
MODELS 15WG-3050A, B



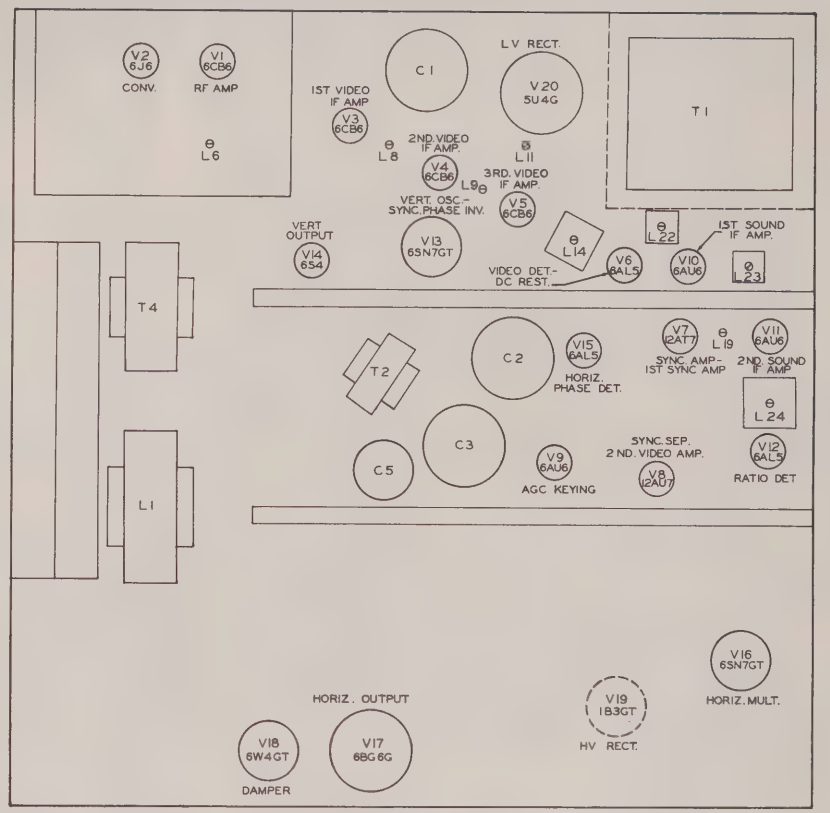
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

MODELS 15WG-3050A, B

AIRLINE

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator, tube, (V16), from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a **6J6** which has pin 1 removed. **This will disable the local oscillator and prevent the possibility of erroneous indications.**
Connect the negative lead of a 3 volt battery to the ungrounded lead of C51. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal gen. to maintain 2 volt reading.
2.	"	"	22.6MC	"	"	A2	"
3.	"	"	25.8MC	"	"	A3	"
4.	"	"	23MC	"	"	A4	"
5.	"	"	21.5MC	"	"	A5	Adjust for **MINIMUM** deflection.
6.	"	"	21.8MC	"	"	A6	"
7.	"	"	20.2MC	"	"	A7	"
8.	"	"	27.7MC	"	"	A8	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC 22.6MC 25.25MC 26.2MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	10KΩ carbon resistor	High side to pin 2, (Grid) of 12AT7, (V7). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A9	Adjust for **MINIMUM** 400% indication.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect a short across C56.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	10KΩ carbon resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect a short across C56.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	10KΩ carbon resistor	High side thru 10KΩ to pin 7, (plate), of 6AL5, (V6). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A10, A11, A12, A13	Disconnect stabilizer capacitor C9. Adjust for maximum amplitude and symmetry as per fig. 2.
12.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A14	Reconnect capacitor C9. Adjust A14 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

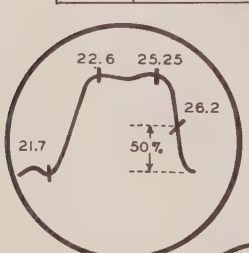


FIG. 1

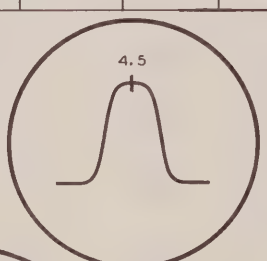


FIG. 2

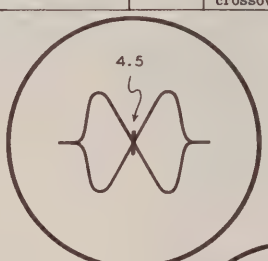


FIG. 3

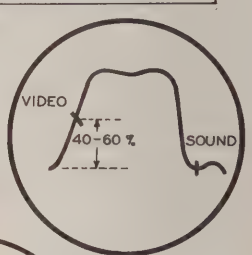


FIG. 4

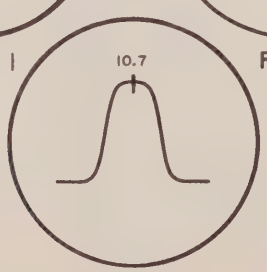


FIG. 5

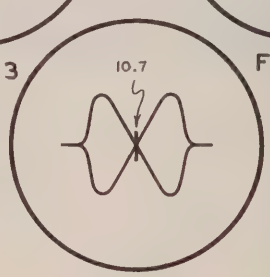


FIG. 6

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A 15. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A15 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A16	Adjust to place sound marker in "notch" as per fig. 4. The Video marker should fall between 40 and 60%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A17	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A18	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A19	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A20	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A21	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A22	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A23	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A24	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A25	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A26	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A27	

THE RF AND MIXER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14.	.1 MFD.	High side to pin 7, (Grid), of 6BE6, (V23). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open.	Across voice coil.	A28, A29 A30, A31	Adjust for maximum output.
15.	"	"	1620KC	"	"	"	A32	"
16.		Loop	1400KC	"	Tune for max. output.	"	A33	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Set pointer to 1400KC.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
17.	2500MMF	High side to pin 1, (Grid), of 6BA6, (V24). Low side to chassis.	10.7MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point (E). Common to chassis.	A34, A35 A36	Adjust for maximum deflection.
18.	"	High side to pin 7, (Grid), of 12AT7, (V22). Low side to chassis.	"	"	"	"	A37, A38	"
19.	"	"	"	"	"	DC probe to Point (F). Common to chassis.	A39	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
17.	2500MMF.	High side to pin 1, (Grid), of 6BA6, (V24). Low side to chassis.	10.7MC (450KC SWP)	FM	Point of non-interference.	Vert. Amp. to Point (E). Low side to chassis.	A34, A35 A36	Disconnect stabilizer capacitor C90. Adjust for maximum amplitude and symmetry as per fig. 5.
18.	"	High side to pin 7, (Grid), of 12AT7, (V22). Low side to chassis.	"	"	"	"	A37, A38	"
19.	"	"	"	"	"	Vert. Amp. to Point (F). Low side to chassis.	A39	Reconnect capacitor C90. Adjust A40 so 10.7MC occurs at center of crossover lines as per fig. 6. SLIGHTLY retouch A34 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20	300Ω carbon resistor	High side thru 300Ω to ungrounded "FM" antenna terminal. Low side to chassis.	108.5MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point (E). Common to chassis.	A40	Adjust for maximum deflection.
21.	"	"	104.5MC	"	Tune for max. deflection.	"	A41	"

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.8VDC	0V	6.3VAC	0V	80VDC	90VDC	0V		
V 2	6J6	85VDC	70VDC	6.3VAC	0V	0V	§-2.5VDC	0V	0	
V 3	6CB6	-3VDC	.5VDC	6.3VAC	0V	110VDC	110VDC	0V		
V 4	6CB6	-.3VDC	.5VDC	6.3VAC	0V	110VDC	110VDC	0V		
V 5	6CB6	0V	1.6VDC	6.3VAC	0V	105VDC	105VDC	0V		
V 6	6AL5	0V	0V	0V	6.3VAC	.9VDC	0V	-1.9VDC		
V 7	12AT7	85VDC	-.6VDC	0V	6.3VAC	6.3VAC	270VDC	0V	7.8VDC	0V
V 8	12AU7	260VDC	0V	13VDC	6.3VAC	6.3VAC	18VDC	0V	2.1VDC	0V
V 9	6AU6	110VDC	125VDC	0V	6.3VAC	-.3VDC	275VDC	125VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	115VDC	115VDC	.3VDC		
V 11	6AU6	0V	0V	6.3VAC	0V	115VDC	115VDC	1.3VDC		
V 12	6AL5	-.2VDC	-.2VDC	0V	6.3VAC	0V	-.1VDC	-.2VDC		
V 13	6SN7GT	§20VDC	85VDC	20VDC	§-19VDC §-37VDC	105VDC 195VDC	0V	0V	6.3VAC	
V 14	6S4	0V	17VDC 42VDC	-.2VDC	0V	6.3VAC	-.2VDC	0V	0V	545VDC
V 15	6AL5	6.4VDC	-6.2VDC	0V	6.3VAC	0V	0V	0V		
V 16	6SN7GT	§2.2VDC	340VDC	12VDC	§-11VDC §-13VDC	160VDC 205VDC	12VDC	0V	6.3VAC	
V 17	6BG6G	0V	0V	13VDC	0V	-17VDC	-17VDC	6.3VAC	310VDC	Top Cap *
V 18	6W4GT	0V	570VDC	650VDC	0V	390VDC	650VDC	650VDC	650VDC	
V 19	1B3GT	* DO NOT MEASURE								Top Cap *
V 20	5U4G	0V	440VDC	0V	360VAC	0V	360VAC	0V	400VDC	
V 21	17BP4	0V	.9VDC	PIN 10 350VDC	PIN 11 6VDC 120VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 13,250V			

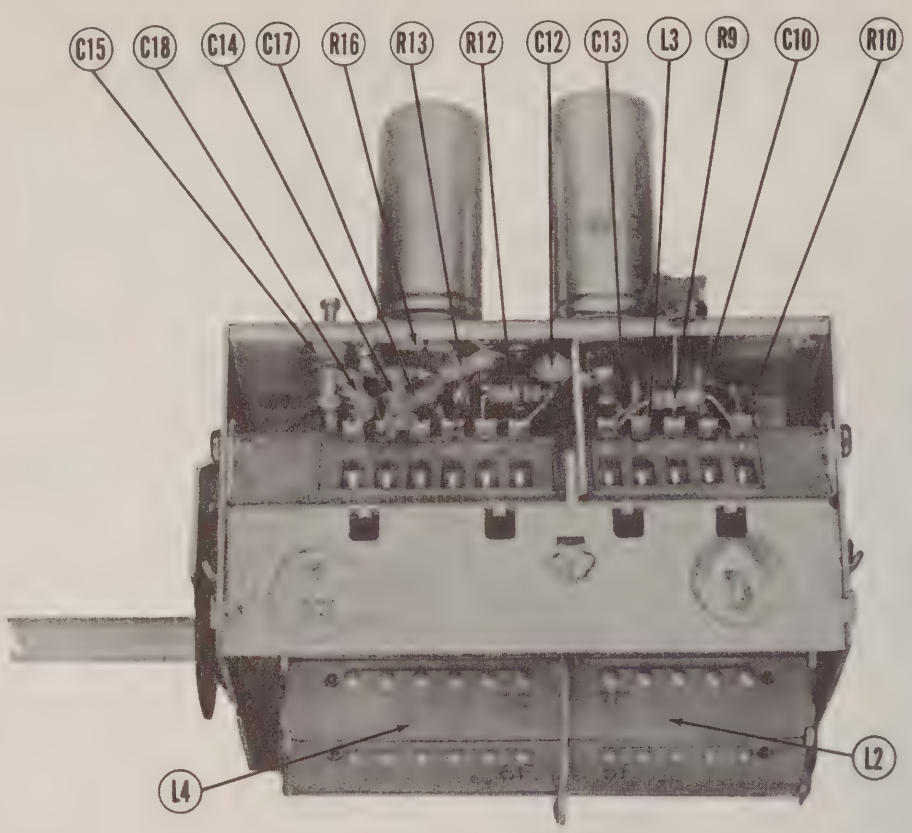
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
* DO NOT MEASURE
FOCUS CONTROL FULLY COUNTER-CLOCKWISE
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

RESISTANCE READINGS

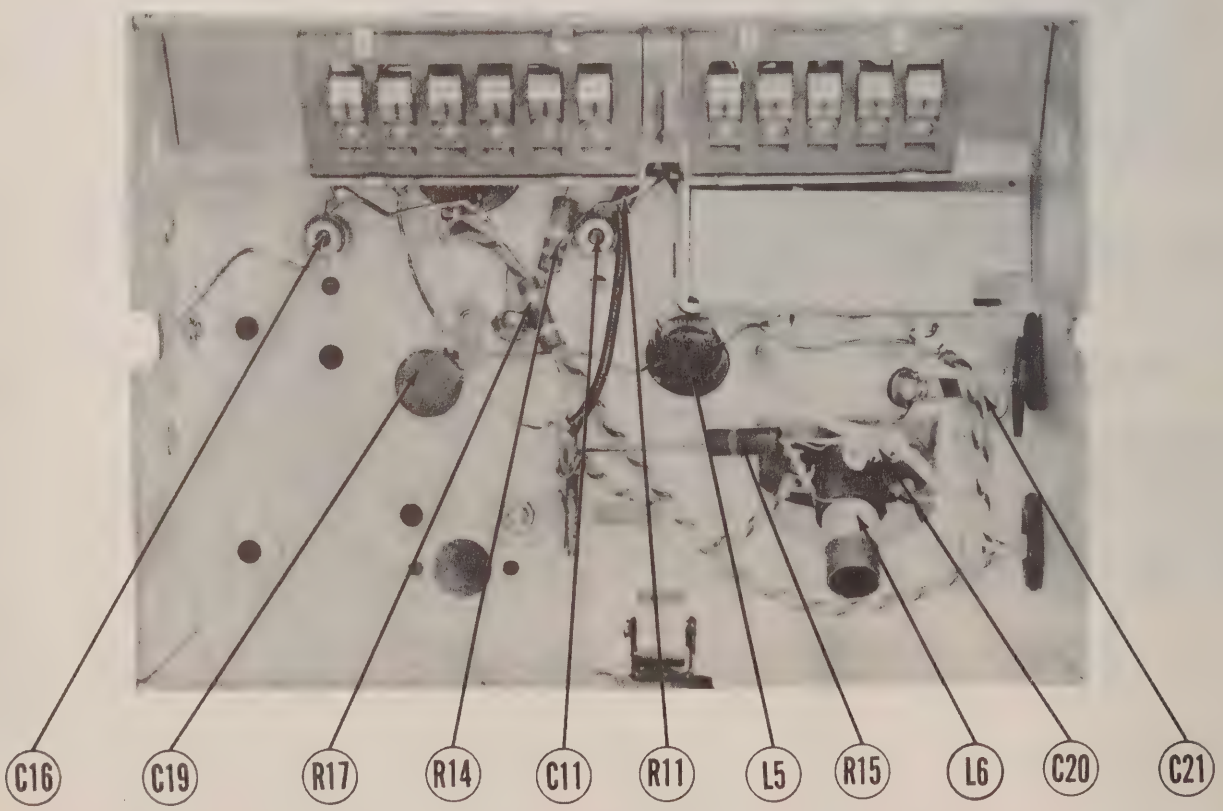
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	480KΩ	0Ω	.1Ω	0Ω	†4.6KΩ	†4.6KΩ	0Ω		
V 2	6J6	†7.1KΩ	†17KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	485KΩ	47Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 4	6CB6	490KΩ	47Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 5	6CB6	15KΩ	180Ω	.1Ω	0Ω	†3.9KΩ	†3.9KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	0Ω	.1Ω	1Meg	0Ω	5.6KΩ		
V 7	12AT7	†10.7KΩ	5.6KΩ	.2Ω	.1Ω	.1Ω	†14KΩ	1 Meg	22KΩ	0Ω
V 8	12AU7	†5.6KΩ	1Meg	3.1KΩ	.1Ω	.1Ω	†820KΩ	0Ω	47KΩ	0Ω
V 9	6AU6	†38KΩ	†2.4KΩ	0Ω	.1Ω	515KΩ	†900Ω	†2.4KΩ		
V 10	6AU6	100KΩ	0Ω	0Ω	.1Ω	†3.4KΩ	†3.4KΩ	100Ω		
V 11	6AU6	1.6Ω	0Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	180Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	0Ω	Inf.	11KΩ		
V 13	6SN7GT	†820KΩ	†9KΩ	3.3KΩ	2.5Meg 1Meg	#4Meg #1.5Meg	0Ω	0Ω	.1Ω	
V 14	6S4	Inf.	5.8KΩ 820Ω	1.8Meg	0Ω	.1Ω	1.8Meg	Inf.	Inf.	#7.8KΩ
V 15	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	27KΩ	Inf.	27KΩ		
V 16	6SN7GT	5.1Meg	†5.6KΩ	1.2KΩ	105KΩ 82KΩ	#325KΩ #225KΩ	1.2KΩ	0Ω	.1Ω	
V 17	6BG6G	Inf.	0Ω	150Ω	Inf.	1Meg	1Meg	.1Ω	†10KΩ	Top Cap #17Ω
V 18	6W4GT	Inf.	#6.8KΩ	800KΩ	Inf.	†52Ω	#12Ω	#8Ω	#8Ω	
V 19	1B3GT	PIN 1-8 HAVE INF. RESISTANCE								Top Cap #140Ω
V 20	5U4G	Inf.	5.5KΩ	Inf.	23Ω	Inf.	24Ω	Inf.	5.5KΩ	
V 21	17BP4	0Ω	1.1Meg	PIN 10 †400Ω	PIN 11 †300KΩ †140KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 2 OF V20
# MEASURED FROM PIN 3 OF V18
FOCUS CONTROL FULLY COUNTER-CLOCKWISE

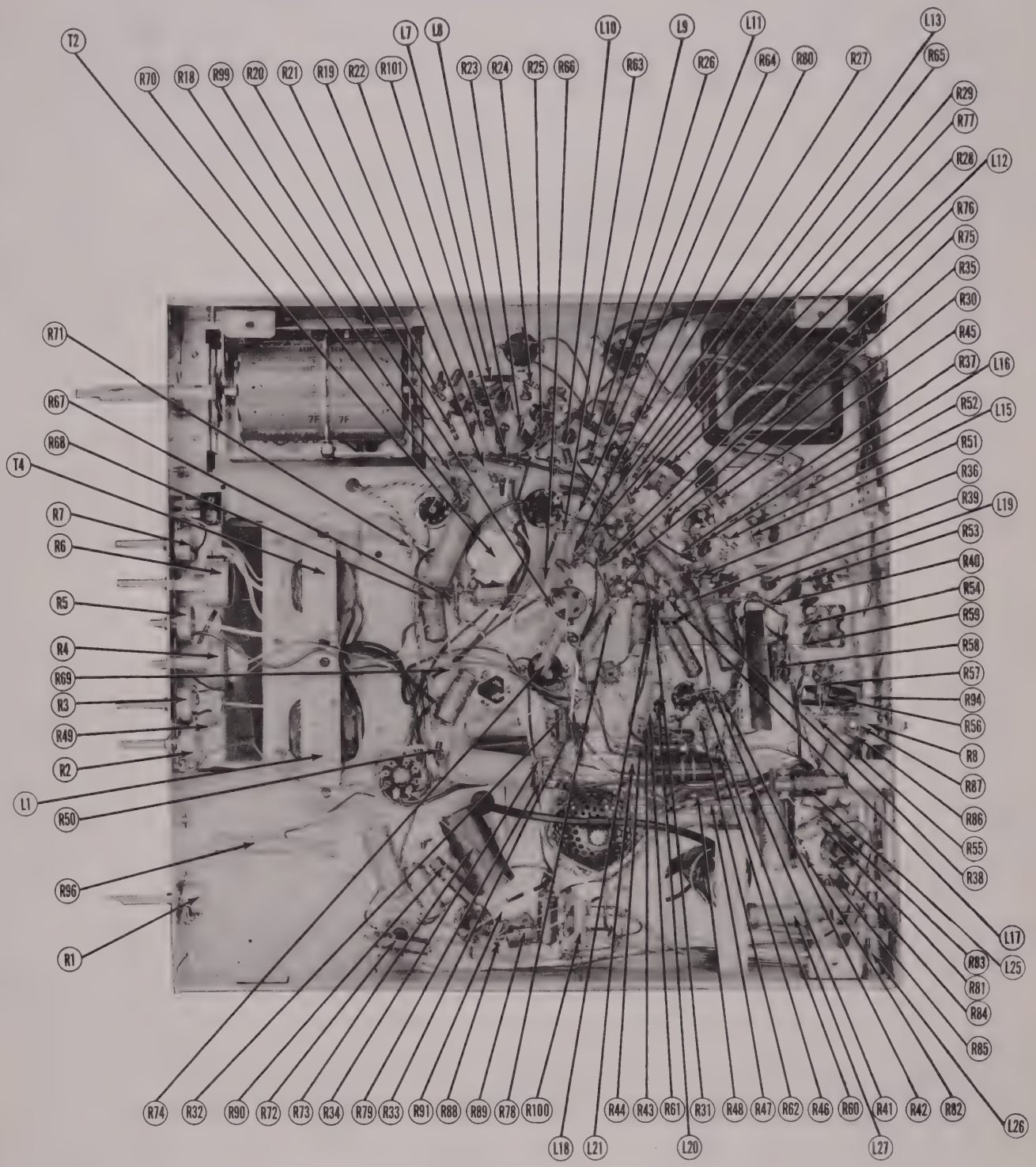
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



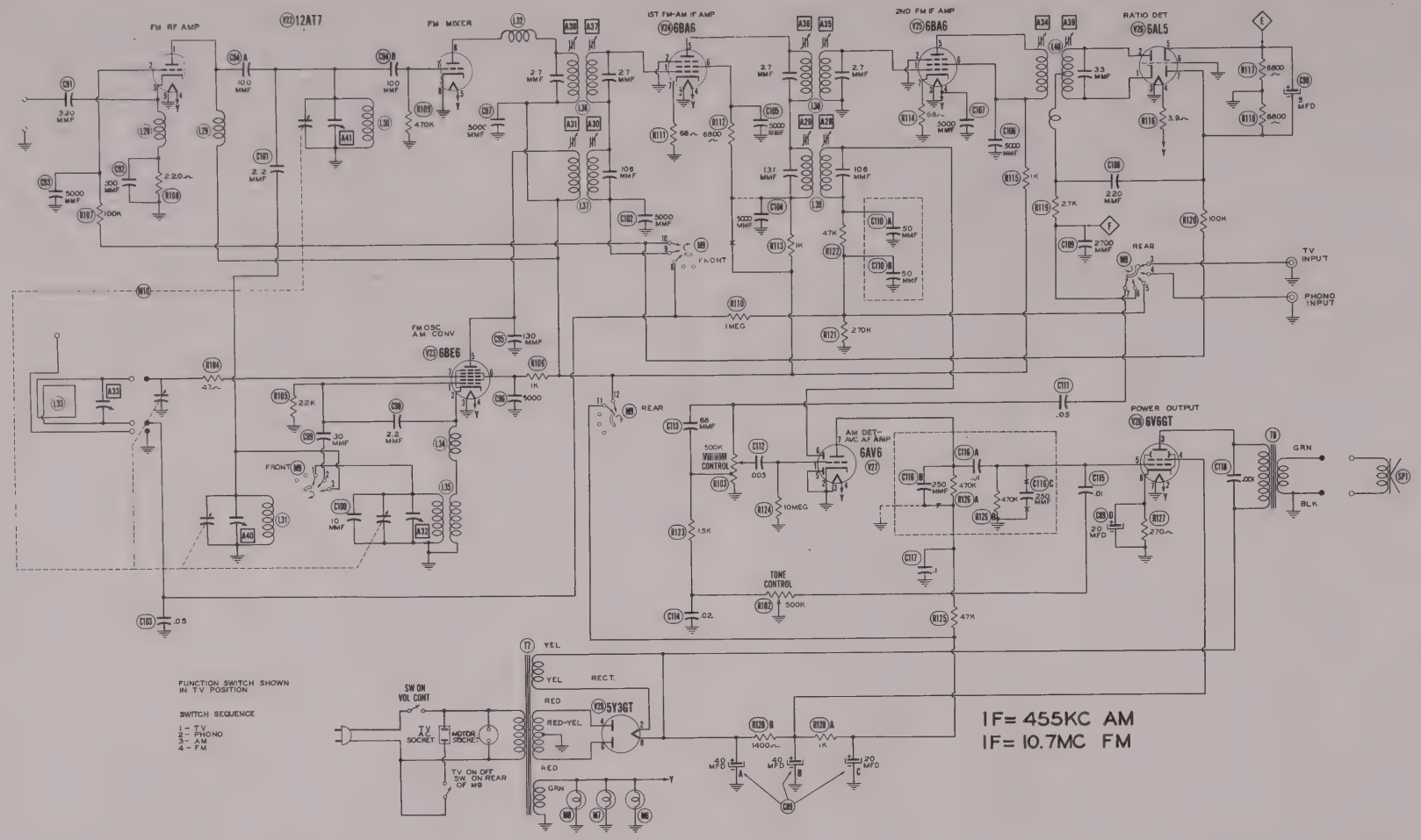
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V22	12AT7	▲120VDC ▼100VDC	‡- 3VDC	‡ 1VDC	0V	0V ▲105VDC	▲120VDC ▼105VDC ‡105VDC	‡9-1.8VDC	0V	6.3VAC
V23	6BE6	‡▲-6.9VDC	0V	0V	6.3VAC	▲120VDC ‡105VDC	▲120VDC ‡115VDC	▲-1.9VDC		
V24	6BA6	▲-.4VDC ‡-.1VDC	0V	0V	6.3VAC	▲105VDC ‡95VDC	.5VDC			
V25	6BA6	0V	0V	0V	6.3VAC	105VDC	105VDC	.5VDC		
V26	6AL5	.1VDC	.1VDC	0V	5VAC	.2VDC	0V	-.2VDC		
V27	6AV6	-.4VDC	0V	0V	6.3VAC	0V	▲-1.2VDC ‡-.4VDC	58VDC		
V28	6V6GT	0V	6.3VAC	320VDC	170VDC	0V	0V	0V	6.8VDC	
V29	5Y3G	0V	245VDC	0V	255VAC	0V	255VAC	0V	245VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V22	12AT7	12.4KΩ	200KΩ	220Ω	0Ω	0Ω	12.4KΩ	470KΩ	0Ω	Ω
V23	6BE6	22KΩ	2.2Ω	0Ω	.1Ω	12.4KΩ	13.4KΩ	1.3Meg		
V24	6BA6	▲1.3Meg	0Ω	0Ω	.1Ω	12.4KΩ	110KΩ	68Ω		
V25	6BA6	.5Ω	0Ω	0Ω	.1Ω	12.4KΩ	13.4KΩ	68Ω		
V26	6AL5	Inf.	Inf.	0Ω	1.9Ω	6.8KΩ	0Ω	6.8KΩ		
V27	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	315KΩ	1570KΩ		
V28	6V6GT	Inf.	.1Ω	†440Ω	11.4KΩ	470KΩ	.7Ω	0Ω	270Ω	
V29	5Y3G	Inf.	60KΩ	Inf.	100Ω	Inf.	100Ω	Inf.	60KΩ	

† MEASURED FROM PIN 8 OF V28

ALL MEASUREMENTS TAKEN IN AM AND FM POSITION ONLY
▲ MEASURED IN AM POSITION
▼ MEASURED IN FM POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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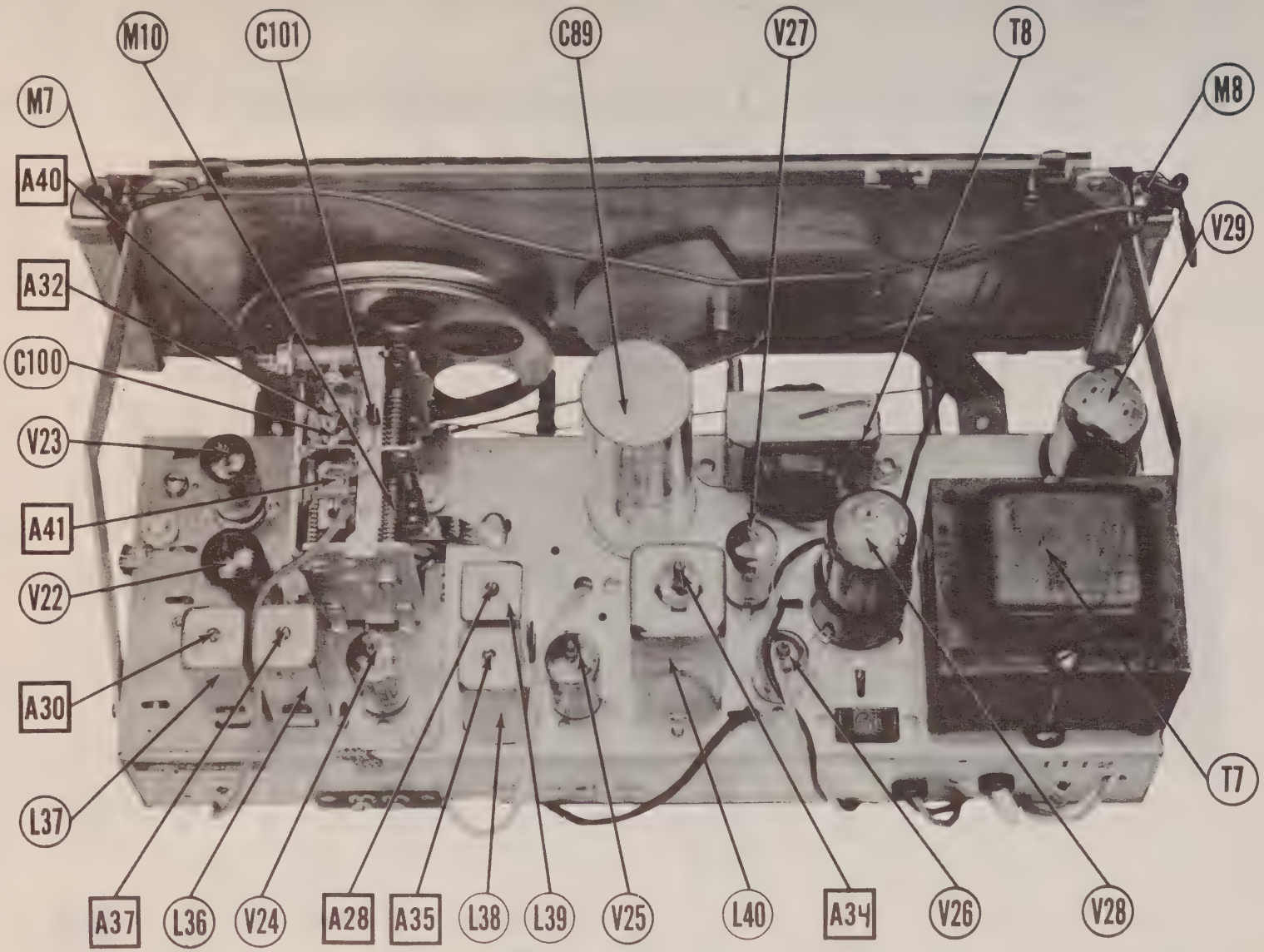
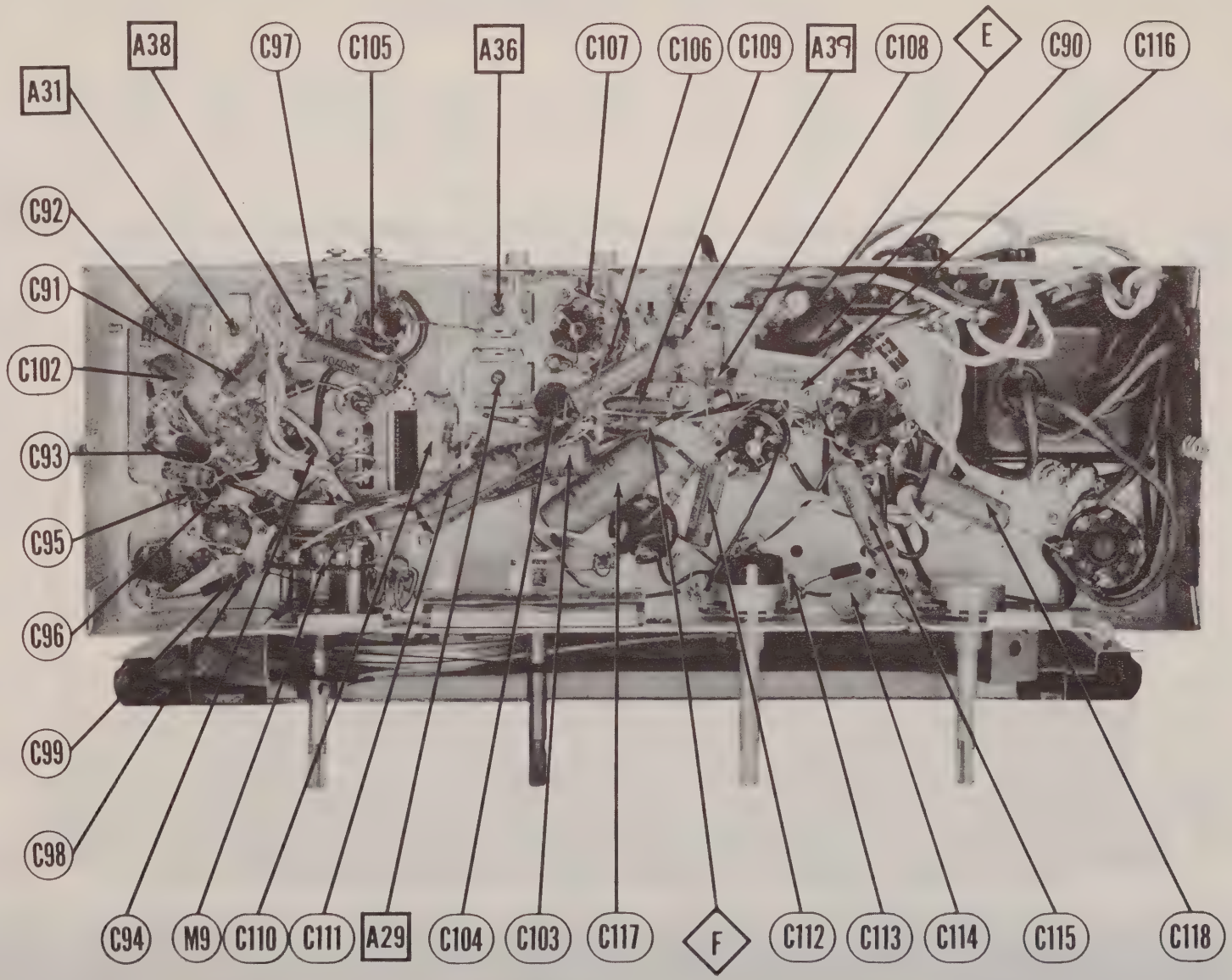
AIRLINE
MODELS 15WG-3050A, B

RADIO SCHEMATIC



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6CB6	6CB6	6CK	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	6CK	
V4	2nd. Video IF Amp.	6CB6	6CB6	6CK	
V5	3rd. Video IF Amp.	6CB6	6CB6	6CK	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	1st. Video Amp.-Sync. Amplifier	12AT7	12AT7	9A	
V8	2nd. Video Amp.-Sync. Separator	12AU7	12AU7	9A	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	Sync. Phase Inv.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V14	Vert. Output	6S4	6S4	9AC	
V15	Horiz. Phase Det.	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	AIRLINE PART No.	SYLVANIA PART No.	THOMAS PART No.		
V21	17BP4	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	450	45X376	AFH3-44		UP8445		TVL-2777	▲ Filter
B	30	450							■ Filter
C2A	80	450	45X384	AFH2-91		UPT8045		TVL-2710	▲ Filter
B	40	50				V5			■ Not used
C3A	80	450	45X376	AFH3-44		UP8445		TVL-2777	▲ Filter
B	30	450							■ Vert. Output Dec.
C4	20	450	45X382	PRS450/20		BR2045A		TVA-1709	Vert. Output Decoupling
C5A	10	450	45X385			UPT204		TVL-1705	■ Not used
B	100	50						TVA-1310	▲ Vert. Output Cathode
C6	5	25	45X378	PRS150/4		BR550		TVA-1203	Horiz. Output Cathode
C7	5	25	45X378	PRS150/4		BR550		TVA-1203	Sync. Amp. Cathode
C8	5	100	45X361	PRS150/4		BR415		TVA-1402	AGC Filter
C9	5	25	45X378	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C10	.5-3		31B-206		829-3				Variable Trimmer
C11	3-9		31B-207		829-10				Variable Trimmer
C12	120		13B-033		TCN-120		N750L-121		AF Amp. Decoupling
C13	1000		47X519	SI1000	D6-102		GP2L-102	5HK-D1	AF Amp. Filament
C14	100		13D-046	SI100N750	TCN-100		N750L-101	5TCU-T1	AF Coupling
C15	.5-3		31B-206		829-3				Variable Trimmer
C16	.5-3		31B-206		829-3				Variable Trimmer
C17	20		13D-042	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C18	10		13D-064	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C19A	1000		13D-071	BPD-2X001	DD-2-102		812-001	5HK-2D1	Osc. Filament
B	1000								RF Bypass
C20	10		13D-064	SI10NP0	TCZ-10		NP0K-100	5TCU-Q1	Fixed Trimmer
C21	120		13B-033		TCN-120		N750L-121		IF Coupling
C22	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C23	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C24	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Decoupling
C25	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Filament
C26	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C27	91	300			TCZ-91		NP0-333-910		Fixed Trimmer
C28	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	IF Coupling
C29	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C30	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Decoupling
C31	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Filament
C32	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C33	51	100		1469-00005	TCZ-51	5R5Q5	NP0-333-510	MS-45	Fixed Trimmer
C34	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	IF Coupling
C35	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Decoupling
C36	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C37	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Cathode
C38	47	100	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	Fixed Trimmer
C39	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass
C40	47	500	47X565	1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	IF Coupling
C41	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C42	5		47X562	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C43	360	500	47X568		TCN-360		N750L-361		Fixed Trimmer
C44	68		47X599		TCZ-68		NP0-333-680	5TCC-Q68	Video Coupling
C45	.047	400	46X397	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C46	.1	600	46X403	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C47	.047	400	46X397	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C48	.1	200	B65104	P288-1	DF-104	PTE4P1		2TM-P1	Picture Tube Cathode
C49	.015	600	F65153	P688-015		PTE6S15		6TM-S15	Vert. Sweep Coupling
C50	.05	600	F65503	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Net.
C51	.5	200	B65503	P288-05	DF-503	PTE4S5		2TM-S5	AGC Filter
C52	1000	500	47X569	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sweep Coupling
C53	1.5		47X584	SI1.5NP0	TCZ-1.5		NP0K-1R5		Sound IF Coupling
C54	10000		47X595	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AVC Filter
C55	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Decoupling
C56	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C57	5000		47X507	[illegible]	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Decoupling
C58	5000		47X507	[illegible]	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C59	5000		47X507	[illegible]	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Filament
C60	470	500	47X525	[illegible]	D6-471	5R5T5	GP2K-471	MS-35	RF Bypass
C61	470	500	47X525	[illegible]	D6-471	5R5T5	GP2K-471	MS-35	De-emphasis
C62	.05	400	46X397	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling
C63	.1	400	D65104	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C64 A	.002			[illegible]		PTE6D2	GP2-333-502		Vert. Integrator Network
B	.005		◆ 76X7	[illegible]	◆ PC-100	PTE6D5	GP2-333-502	◆ 101C1	Vert. Integrator Network
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Network
C65	4700	500	47X543	1464-005	D6-472	1DR5D5	GP2-333-472	MS-25	Vert. Sync. Coupling
C66	.05	600	F65503	[illegible]	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C67	.25	400	B65254	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C68	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C69	1000		47X519	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C70	.01	400	B65103	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Integrator Network
C71	.05	200	B65503	P288-05	DF-503	PTE4S5		2TM-S5	Horiz. Feedback
C72	.005	600	B65502	[illegible]	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C73	.25	200	B65254	P488-25		GT2P25		2TM-P25	AFC Filter
C74	.05	200	B65503	P288-05	D6-503	PTE4S5		2TM-S5	AFC Filter
C75	4700	500	47X543	1464-005	D6-472	1DR5D5	GP2-333-472	MS-25	Fixed Trimmer
C76	330	500	47X570	1469-00035					Horiz. MV Feedback
C77	47	500	47X565	1469-00005		5R5Q5		MS-45	Horiz. MV Feedback
C78	.25	400	B65254	P488-25		GT4P25		4TM-P25	Horiz. MV Decoupling
C79	470	500	47X525	1469-0005		5R5T5		MS-35	Horiz. Discharge ◆
C80	390	500	47X571	1469-0004		5W5T15		MS-34	Horiz. Sweep Coupling
C81	130	500	RCM20A131K	1469-00015		PTE6S5		6TM-S5	Horiz. Output Screen
C82	.05	600	F65503	P688-05	DF-503	1WSD1	GP2L-102	5HK-D1	Horiz. Output Screen
C83	1000		47X519	[illegible]	D6-102	PTE4S5		4TM-S5	Fixed Trimmer
C84	.05	400	46X397	P488-05		PTE6S5		6TM-S3	Damper Filter
C85	.03	400	[illegible]	P488-03		GT4P25		4TM-P25	Horiz. Sweep Coupling
C86	.25	400	D65254	P488-25	TV3-502				HV Filter
C87	500	20000	47X560	HV-20C	DD-3-103	1D3S1	821-01	5HK-S1	Line Filter
C88A	10000		[illegible]	BPD-01		1D3S1	821-01	5HK-S1	Line Filter
B	10000			BPD-01		1D3S1	821-01	5HK-S1	Line Filter

◆ Items C64A, C64B, C64C, R66A, R66B, R66C are combined on one unit.
• Some models use 430MMF. in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	3000Ω	½	40X303		AG-15-S	B-12	Contrast Control
B	Shaft		Not req.		FS-3	Not req.	Attach to R1A per instructions
R2A	25KΩ	½	40X330	Q11-120	AG-40-S	B-26	Horiz. Hold Control
B	Shaft		Not req.	Not req.	[illegible]	Not req.	Attach to R2A per instructions
R3A	500KΩ	½	40X290	Q11-133	AG-58-S	B-59	Brightness Control
B	Shaft		Not req.	Not req.	[illegible]	Not req.	Attach to R3A per instructions
R4A	5000Ω	½	40X394	Q11-114	AM-19-S		Vert. Linearity Control
B	Shaft		Not req.	PQ	RS-2		Attach to R4A per instructions
C	Bushing		Not req.	S-3	59-186		Attach to R4A per instructions
R5A	2.5Meg	½	40X293	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6	4000Ω	2	40X304				Focus Control - Wire Wound
R7A	1.5Meg	½	40X291	Q11-138	AG-83-S	AN-75	Vert. Hold Control
B	Shaft		Not req.	Not req.	[illegible]	AK-4	Attach to R7A per instructions
R8A	150KΩ	½	40X331	Q11-130 #	AG-52-S		Horiz. Drive Control - See Note 1
B	Shaft		Not req.	RQ	FKS-1/4		Attach to R8A per instructions

Note 1 Some sets use 300KΩ control shunted by 330KΩ resistor
When using this replacement connect 390KΩ resistor across two outside terminals.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	3900Ω	½	12A-046	BTS-3900	Antenna Coil Shunt
R10	68KΩ	20% ½	12A-039	BTS-68K	AGC Network - See Note 3
R11	2200Ω	20% ½	12A-049	BTS-2200	RF Amp. Decoupling
R13	10KΩ	20% ½	12A-040	BTS-10K	RF Coil Shunt
R13	4700Ω	20% ½	12A-043	BTS-4700	Mixer Grid
R14	330KΩ	20% ½	12A-041	BTS-330K	Mixer Grid
R15	15KΩ	30% ½	12A-021	BTS-15K	Mixer Plate
R16	10KΩ	½	12A-040	BTS-10K	Osc. Grid
R17	4700Ω	½	12A-043	BTS-4700	Osc. Plate
R18	1000Ω	½	B85102	BTS-1000	AGC Network
R19	1000Ω	½	B85102	BTS-1000	AGC Network
R20	3900Ω	5% ½	B83392	BTS-3900-5%	1st. Video IF Amp. Grid
R21	47Ω	5% ½	B83470		1st. Video IF Amp. Cathode
R22	1000Ω	½	B85102	BTS-1000	1st. Video IF Amp. Decoupling
R23	10KΩ	5% ½	B83103		2nd. Video IF Amp. Grid
R24	47Ω	5% ½	B83470		2nd. Video IF Amp. Cathode
R25	1000Ω	½	B85102	BTS-1000	2nd. Video IF Amp. Decoupling
R26	15KΩ	½	B83153		3rd. Video IF Amp. Grid
R27	180Ω	½	B84181	BTS-180	3rd. Video IF Amp. Cathode
R28	1500Ω	½	B84152	BTS-1500	3rd. Video IF Amp. Decoupling
R29	22KΩ	½	B84223	BTS-22K	3rd. Video IF Amp. Plate Choke Shunt
R30	2700Ω	5% 1	C83272	BTA-2700-5%	Voltage Divider
R31	33KΩ	½	B84333	BTS-33K	Keyed AGC Grid
R32	47KΩ	½	B84473	BTS-47K	Keyed AGC Plate
R33	470KΩ	½	B84474	BTS-470K	AGC Network
R34	10KΩ	½	B84103	BTS-10K	AGC Network
R35	5600Ω	½	B84562	BTS-5600	Video Det. Diode Load
R36	5600Ω	½	B84562	BTS-5600	1st. Video Amp. Plate - See Note 4
R37	10KΩ	5% ½	B83103	BTS-10K-5%	Isolation
R38	1Meg	20% ½	B85105	BTS-1Meg	1st. Sync. Sep. Grid
R39	22KΩ	½	B84223	BTS-22K	1st. Sync. Sep. Cathode
R40	12KΩ	½	B84123	BTS-12K	1st. Sync. Sep. Plate
R41	1Meg	½	B84105	BTS-1Meg	2nd. Video Amp. Grid
R42	100Ω	½	B84101	BTS-100	2nd. Video Amp. Cathode
R43	4700Ω	5% 1	C83473	BTA-4700-5%	2nd. Video Amp. Plate
R44	10KΩ	5% ½	B83103	BTS-10K-5%	Isolation

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R45	1Meg	½	B84105	BTS-1Meg	DC Restorer Diode Load
R46	100KΩ	½	B84104	BTS-100K	Picture Tube Grid
R47	22KΩ	½	B84223	BTS-22K	Picture Tube Cathode
R48	100KΩ	½	B84104	BTS-100K	Voltage Divider
R49	47KΩ	½	B84473	BTS-47K	Voltage Divider
R50	2200Ω	20% ½	B85222	BTS-2200	Vert. Retrace Blanking Network
R51	100Ω	½	B84101	BTS-100	1st. Sound IF Amp. Cathode
R52	1000Ω	½	B84102	BTS-1000	1st. Sound IF Amp. Decoupling
R53	180Ω	½	B84181	BTS-180	2nd. Sound IF Amp. Cathode
R54	1000Ω	½	B84102	BTS-1000	2nd. Sound IF Amp. Decoupling
R55	470KΩ	½	B84474	BTS-470K	AVC Network
R56	5600Ω	½	B84562	BTS-5600	Ratio Det Diode Load
R57	5600Ω	½	B84562	BTS-5600	Ratio Det Diode Load
R58	68KΩ	½	B84683	BTS-68K	De-emphasis
R59	120Ω	½	B84121	BTS-120	Balancing
R60	2200Ω	½	B84222	BTS-2200	Isolation
R61	47KΩ	½	B84473	BTS-47K	2nd. Sync. Sep. Cathode
R62	820KΩ	½	B84824	BTS-820K	2nd. Sync. Sep. Plate
R63	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Cathode
R64	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Plate
R65	3300Ω	5% ½	B83332	BTS-3300-5%	Sync. Phase Inv. Plate
R66A	22KΩ	½	76X7 ◆	BTS-22K	Integrator
B	8200Ω	½		BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R67	1Meg	½	B84105	BTS-1Meg	Vert. Osc. Grid
R68	1.5Meg	½	B84155	BTS-1.5Meg	Vert. Osc. Plate
R69	4700Ω	5% ½	B83473	BTS-4700-5%	Vert. Peaking
R70	1.8Meg	½	B84185	BTS-1.8Meg	Vert. Output Grid
R71	820Ω	½	B84821	BTS-820	Vert. Output Cathode
R72	6800Ω	2	B84682	BTB-6800	Decoupling - See Note 4
R73	470KΩ	½	B84474	BTS-470K	Bleeder
R74	470KΩ	½	B84474	BTS-470K	Bleeder
R75	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Diode Load
R76	100KΩ	½	B84104	BTS-100K	Horiz. Phase Det. Diode Load
R77	4.7 Meg	½	B84475	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R78	27KΩ	½	B84273	BTS-27K	Horiz. Phase Det. Diode Load
R79	15KΩ	1	C84153	BTA-15K	Horiz. Feedback
R80	470KΩ	½	B84474	BTS-470K	Horiz. AFC Filter
R81	33KΩ	½	B84333	BTS-33K	Horiz. AFC Filter
R82	1200Ω	½	B84122	BTS-1200	Horiz. MV Cathode
R83	5600Ω	½	B84562	BTS-5600	Horiz. MV Plate
R84	82KΩ	½	B84823	BTS-82K	Horiz. MV Grid
R85	180KΩ	½	B84184	BTS-180K	Horiz. MV Plate
R86	47KΩ	20% ½	B85473	BTS-47K	Horiz. MV Plate
R87	330KΩ	5% ½	B83334	BTS-330K-5%	Horiz. Drive Control Shunt - See Note 2
R88	150Ω	½	B84151		Parasitic Suppressor
R89	1Meg	½	B84105	BTS-1Meg	Horiz. Output Grid
R90	150Ω	2	B84151	BW-2-150	Horiz. Output Cathode
R91	10KΩ	5	43X247	1 3/4A-10K	Horiz. Output Screen - Wire Wound
R92	5.1Ω	½	43X239	BW-½-5.1	HV Rect. Filament
R93	1Meg	20% ½	C85105		HV Filter
R94	100KΩ	½	B84104	BTS-100K	1st. Sound IF Amp. Grid - See Note 2
R95	10KΩ	5	43X247	1 3/4A-10K	Bleeder - Wire Wound
R96	7500Ω	15	43X256	2D-7500	Bleeder - Wire Wound
R97	1500Ω	15	43X261	2D-1500	Voltage Divider - Wire Wound
R98	500Ω	10	43X245	1 3/4A-500	Voltage Divider - Wire Wound
R99	500Ω	5	43X257	1 3/4A-500	Focus Coil Shunt - Wire Wound
R100	10KΩ	½	B83103	BTS-10K	Horiz. Peaking
R101	150Ω	½	B83151	BTS-150	1st. Video IF Amp. Decoupling

◆ Items R66A, R66B, R66C, C64A, C64B, and C64C are combined into one unit.
Note 2 Not used in all models.
Note 3 Some models use 47KΩ resistor in this application.
Note 4 Some models use parallel resistors in this application to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.5A	750VCT .250ADC	5VAC @ 3A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 8A	53X318		P-3059	TP-360

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1.15KΩ	54X7	A-8122 ①	A-3000 ①	TBO-2 ①	Vert. Block Osc. Trans.
T3	140Ω Tap 12Ω	10.6Ω Taps .3Ω, 3.1Ω and 8.1Ω SEC. 2 5.6Ω SEC. 3 0Ω	53X320		HVO-7 and MWC-1		Horiz. Output Trans.
T4	1KΩ Tap @ 12Ω		51X151	A-8112	A-3037 ①	TSO-5 ①	Vert. Output Trans.
T5A	20Ω		9A2193	DY-7	MDF-70		Horiz. Deflection Coils
B	50Ω						Vert. Deflection Coils
T6	670Ω		9A2162		MF-2		Focus Coil

① Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.250A	52Ω	2 Henries	52X88	C-2326	C-2991	TR-3300 ①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	9A2119		Channel # 2
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid and Osc. Coil	0Ω		9A2131		Channel # 2
L5	Fil. Choke	0Ω				
L6	1st. Video IF	.7Ω		31A-095		
L7	Fil. Choke	0Ω		[illegible]		
L8	2nd. Video IF	.3Ω		9A2165		Includes Trap .4Ω
L9	Fil. Choke	0Ω		9A2033		
L10	3rd. Video IF	.2Ω		9A2166		Includes Trap 0Ω
L11	Cathode Trap	0Ω	.1Ω	9A2169		
L12	Fil. Choke	0Ω		9A2033		
L13	RF Choke	2.5Ω		9A1979		
L14	4th. Video IF	.2Ω		9A2167		Includes Trap .1Ω
L15	Peaking	9Ω		[illegible]	19-1920	100 Microhenries (Yellow Dot)
L16	Peaking	35Ω		36A5		750 Microhenries (Green Dot)
L17	Peaking	15Ω		36A7	19-1921 †	190 Microhenries wound on 22KΩ resistor
L18	Peaking	16Ω		36A4	19-1922 †	215 Microhenries wound on 22KΩ resistor
L19	4.5MC Trap	.3Ω		9A2074		
L20	Peaking	14Ω		36A8	19-1921 ▲	185 Microhenries wound on 47KΩ resistor
L21	Peaking	15Ω		36A2	19-1921	190 Microhenries (White Dot)
L22	1st. Sound IF	2.5Ω		9A2168		
L23	2nd. Sound IF	1.5Ω	1.6Ω	9A2170		
L24	Ratio Det. Trans.	3Ω	.3Ω	9A2171		Tap. .7Ω
L25	Horiz. Osc.	50Ω		[illegible]		
L26	Width Coil	6Ω		9A2183		
L27	Horiz. Lin.	5.6Ω		9A2172		Tap 1.5Ω

† Parallel with 22KΩ resistor.
▲ Parallel with 47KΩ resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA AIRLINE PART No. FUSE	REPLACEMENT DATA AIRLINE PART No. HOLDER	REPLACEMENT DATA LITTELFUSE PART No. FUSE	REPLACEMENT DATA LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG Slo Blo	.250	16XI47	16XI46	313.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	RF Tuner	25A1080	
M3	Ion Trap	2A401	
	Knob	10A741	(Channel Selector)
	Knob	10A742	(Fine Tuning)
	Knob	10A756	(Contrast)
	Antenna Coil	9A2120	Channel # 3
		9A2121	Channel # 4
		9A2122	Channel # 5
		9A2123	Channel # 6
		9A2124	Channel # 7
		9A2125	Channel # 8
		9A2126	Channel # 9
		9A2127	Channel # 10
		9A2128	Channel # 11
		9A2129	Channel # 12
		9A2130	Channel # 13
	RF, Mixer Grid & Osc. Coils	9A2132	Channel # 3
		9A2133	Channel # 4
		9A2134	Channel # 5
		9A2135	Channel # 6
		[illegible]	Channel # 7
		9A2137	Channel # 8
		9A2138	Channel # 9
		9A2139	Channel # 10
		9A2140	Channel # 11
		9A2141	Channel # 12
		9A2142	Channel # 13

AIRLINE
MODELS 15WG-3050A, B

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V22	FM RF Amplifier-FM Mixer	12AT7	12AT7	9A	
V23	FM Oscillator-AM Converter	6BE6	6BE6	7CH	
V24	1st. FM-AM IF Amp	6BA6	6BA6	7BK	
V25	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V26	Ratio Detector	6AL5	6AL5	6BT	
V27	AM Detector-AVC-AF Amplifier	6AV6	6AV6	7BT	
V28	Power Output	6V6GT	6V6GT	7AC	
V29	Rectifier	5Y3G	5Y3G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C89A	40	350	45X359	AFH4-52		UP44235C		TVL-4605	▪ Filter
B	40	350							■ Filter
C	20	350							▲ Filter
D	20	25							Output Cathode
C90	5	100	45X361	PRS150/4		BR415		TVA-1402	Stabilizing Cap.
C91	330	500	47X470	1469-00035	D6-331		GP2K-331	1FM-335	RF Coupling
C92	500		47X508	SI500	D6-501	5W5T5	GP2K-501	5GA-T5	RF Amp. Cathode
C93	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Amp. Grid
C94A	100		76X4	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	RF Coupling
B	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	RF Coupling
C95	130		47X559		TCN-130		N750L-131		Fixed Trimmer
C96	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Osc. Anode
C97	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Conv. Plate
C98	2.2		47X557		TCZ-2.2		NP0K-2R2		Osc. Feedback
C99	30		47X558		TCN-30		N750K-300		Osc. Grid Cap.
C100	10		47X523	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C101	2.2		47X557		TCZ-2.2		NP0K-2R2		Osc. Coupling
C102	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C103	.05	200	B66503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C104	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Plate
C105	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Screen
C106	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Dec
C107	5000		47X507	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. FM IF Amp. Fil.
C108	220	500	47X468	1469-00025	D6-221	5R5T25	GP2K-221	1FM-325	Diode Load Cap.
C109	2700		47X492	SI2700	D6-272	5R5D3	GP2-333-272	1FM-23	De-emphasis
C110A	50		47X112	SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Diode RF Filter
B	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Diode RF Filter
C111	.05	200	B66503	P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C112	.005	400	D66502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C113	68	500	47X471	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	Tone Comp.
C114	.02	200	B66203	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp.
C115	.01	200	B66103	P488-01	DF-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C116A	.01				†PC-80				Audio Coupling
B	250								AF Amp. Plate
C									Output Grid
C117	.1	400	D66104	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C118	.001	800	H66102	P1088-001		PTE16D1		MB-D1	Output Plate

† Items C116A, C116B, C116C, R124A, R124B are combined in one unit.
When replacing separately, C116B and C116C should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R102A	500KΩ	½	40X311	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R102A per instructions
R103A	500KΩ	½	36X381	Q13-133X	AK-80	BTSK-66-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R103A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R103A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R104	47Ω	½	B85470		Parasitic Suppressor
R105	22KΩ	½	B85223	BTS-22K	Osc. Grid
R106	1000Ω	½	B85102	BTS-1000	Osc. Anode
R107	100KΩ	½	B84104	BTS-100K	FM RF Amp. Grid
R108	220Ω	½	B85221	BTS-220	FM RF Amp. Cathode
R109	470KΩ	½	B85474	BTS-470K	FM Mixer Grid
R110	1Meg	½	B85105	BTS-1Meg	AVC Network
R111	68Ω	½	B85680		1st. IF Amp. Cathode
R112	6800Ω	½	B84682	BTS-6800	1st IF Amp. Screen
R113	1000Ω	½	B85102	BTS-1000	1st. IF Amp. Decoupling
R114	68Ω	½	B85680		2nd. FM IF Amp. Cathode
R115	1000Ω	½	B85102	BTS-1000	2nd. FM IF Amp. Decoupling
R116	3.9Ω	½	43X233		Ratio Det. Diode Filament - See Note 5
R117	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R118	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R119	27KΩ	½	B84273	BTS-27K	De-emphasis
R120	100KΩ	½	B85104	BTS-100K	AVC Network
R121	270KΩ	½	B85274	BTS-270K	AVC Network
R122	47KΩ	½	B84473	BTS-47K	Diode Filter
R123	15KΩ	½	B85153	BTS-15K	Tone Compensation
R124	10Meg	½	B85106	BTS-10Meg	AF Amp. Grid
R125	47KΩ	½	B85473	BTS-47K	AF Amp. Plate Decoupling

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
R126A	470KΩ	½		BTS-470K	AF Amp. Plate
B	470KΩ	½		BTS-470K	Output Grid
R127	270Ω	½	B84271	BTS-270	Output Cathode
R128A	1000Ω	4	43X224		Filter - Wire Wound
B	1400Ω	6			Filter - Wire Wound

† Items R126A, 126B, C116A, C11B, and C116C are combined into one unit.
Note 5 Some models use 3.6Ω resistor in this application.

TRANSFORMER (POWER) (RADIO CHASSIS)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T7	117VAC @.575A	520VCT .085A	5VAC @ 2A	6.3VAC @ 2.5A	53X290			PH-70 ②

② Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	5.6KΩ	4.3Ω	440Ω	.85Ω	51X134	A-3877 ①	A-2930 ①	RO-9 ①	① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	VIKING PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	12A490	12J12	12A4A	
	PM	4.3Ω				
	CONE DIA.	V. C. DIA.				
SP2	11 7/8"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	IRC PART No.	
L28	FM Ant. Coil	.2Ω		35A9		CLA	.47 Microhenry
L29	RF Choke	3Ω		35A8		CLA	3.3Microhenries
L30	FM-RF Coil	0Ω		9A2066			
L31	FM Osc.	0Ω		9A2067			
L32	Parasitic Suppressor	0Ω		9A2103			
L33	AM Loop Ant.	1.4Ω	.1Ω	9A2146			
L34	Cathode Choke	1.8Ω		35A5		CLA	2.2Microhenries
L35	AM Osc.	.4Ω	5.3Ω	9A2065			
L36	1st. FM IF	.9Ω	.9Ω	9A2060			
L37	1st. AM IF	11Ω	13Ω	9A2062			
L38	2nd. FM IF	.9Ω	.9Ω	9A2061			
L39	2nd. AM IF	12Ω	13Ω	9A2063			
L40	Ratio Det. Trans.	1.2Ω	.1Ω	9A2161			Tap .3Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIRLINE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M4	W-R-A1SM	ACD-2J	A-1 A-3	W22AB-T	A65MG A62A	96-T	O-1 or S-1 and O-3 or S-3	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

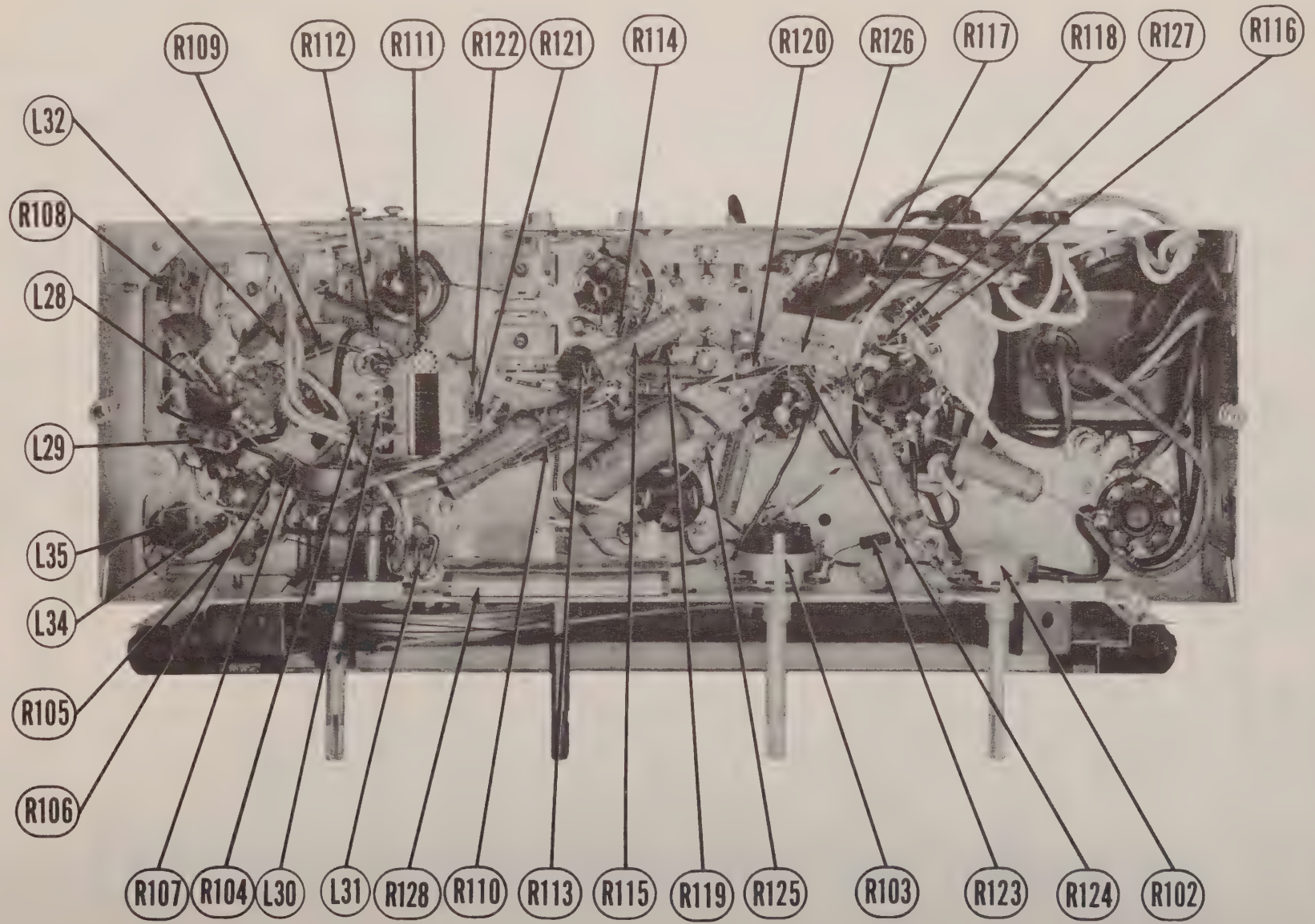
ITEM No.	REPLACEMENT DATA		REMARKS
	AIRLINE PART No.	WALCO PART No.	
M5A	W-R-13016	W-10S	Standard
B	W-R-13017	W-10MGS	Microgroove

DIAL LIGHTS

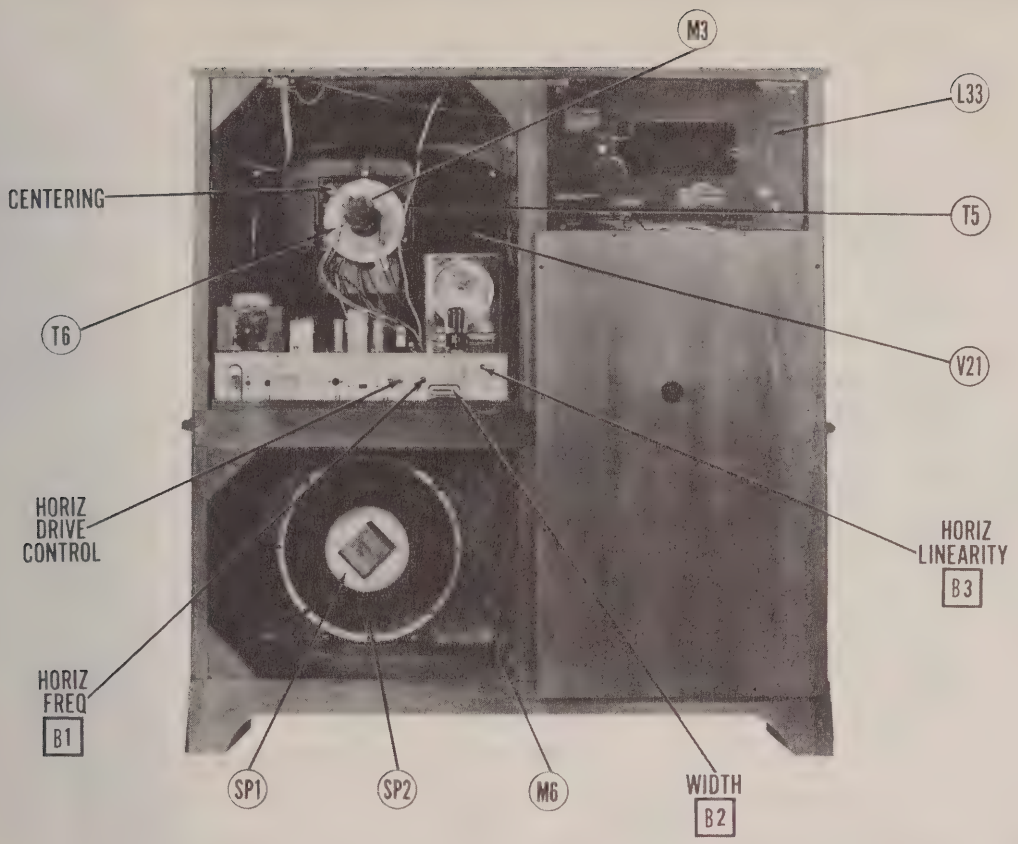
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRLINE PART No.		
M6	Bayonet	6-8	.15	Brown	7A103		Type # 47
M7	Bayonet	6-8	.15	Brown	7A103		Type # 47
M8	Bayonet	7.5	.20	White	7A32		Type # 51

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M9	Switch	2A397	(Function) TV Phono AM FM
M10	Tuning Cap	14A209	(19-522MMF - RF Section) (38-220MMF - Osc. Section)
A33	Trimmer	17A256	2-24MMF (AM Ant. Adj.)
A40	Trimmer	17A255	1-8MMF (FM Osc. Adj.)
	Knob	10A762	Tuning



RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally. The picture should pull into synchronization after momentarily interrupting the signal, over at least 90° of the hold control range.
Turn the horizontal drive control clockwise until bright vertical bars appear in the left center of the picture. Then counter-clockwise just enough to remove the bars.
Adjust the width slug, (B2), until the picture is slightly wider than necessary to fill the mask horizontally.
Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

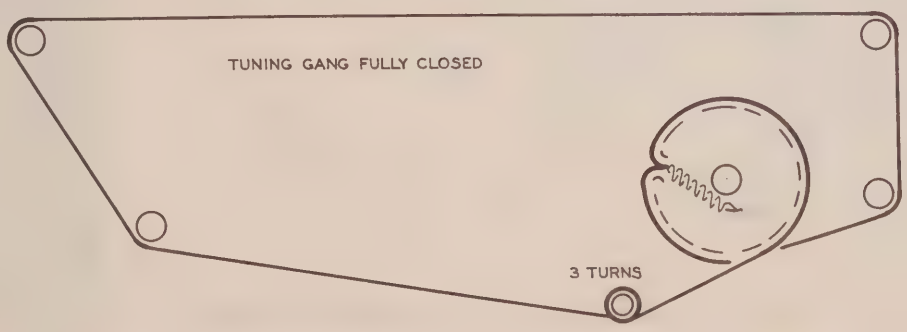
TELEVISION CHASSIS REMOVAL:

1. Remove three push-on type control knobs.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect TV audio plug.
6. Remove four metal bolts from chassis.
7. Disconnect speaker.
8. Remove four 11/32" from speaker. Remove speaker.

NOTE: For picture tube removal it is necessary to remove the chassis as outlined above.

RADIO CHASSIS REMOVAL:

1. Remove four push-on type control knobs.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect AM loop.
4. Disconnect FM antenna.
5. Remove jewel light.
6. Disconnect phono jack.
7. Disconnect phono power plug.
8. Remove two 1/4" hex head bolts from chassis. Remove chassis.



DIAL CORD STRINGING

PHOTOFACT* Folder

AUTOMATIC
MODELS TV-5006, TV-5061, TV-5077

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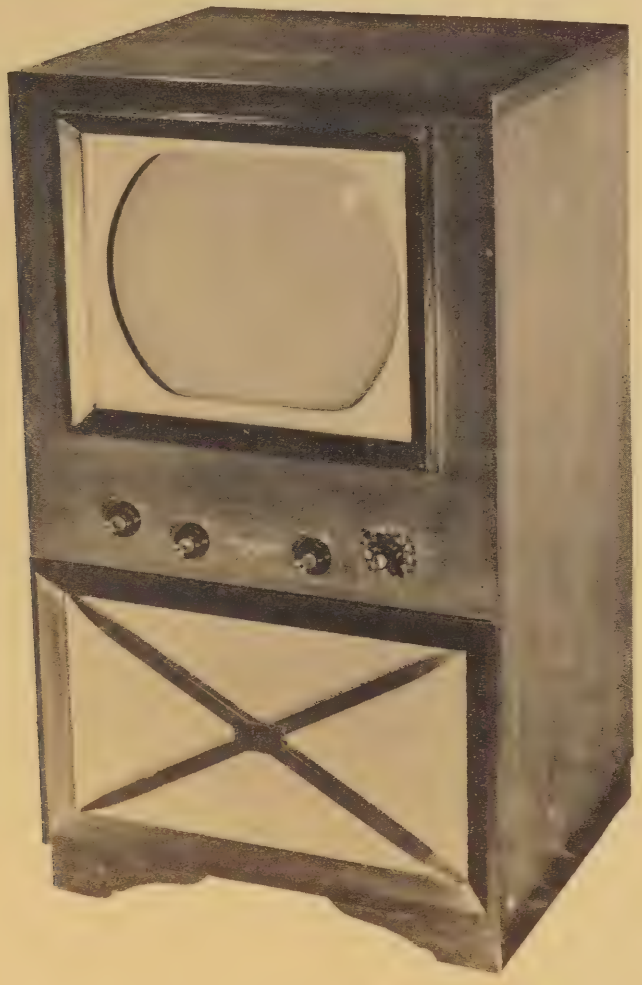

MODEL TV-5061

AUTOMATIC
MODELS TV-5006, TV-5061, TV-5077

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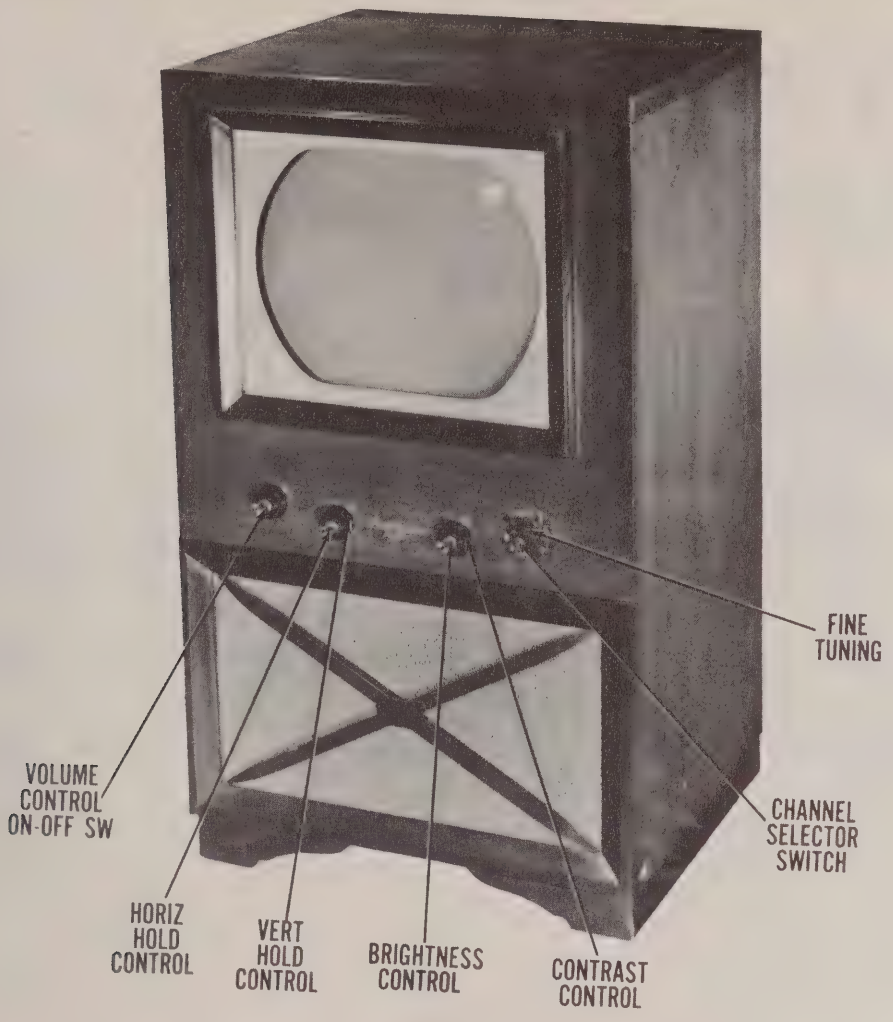
DATE 9-51 SET 145 FOLDER 4



AUTOMATIC
MODELS TV-5006, TV-5061, TV-5077

AUTOMATIC MODEL TV-5061

TRADE NAME	Automatic, Models TV-5006, TV-5061, TV-5077
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.2 Amp. at 117 Volts AC
TUNING RANGE— CHANNELS	2 thru 13

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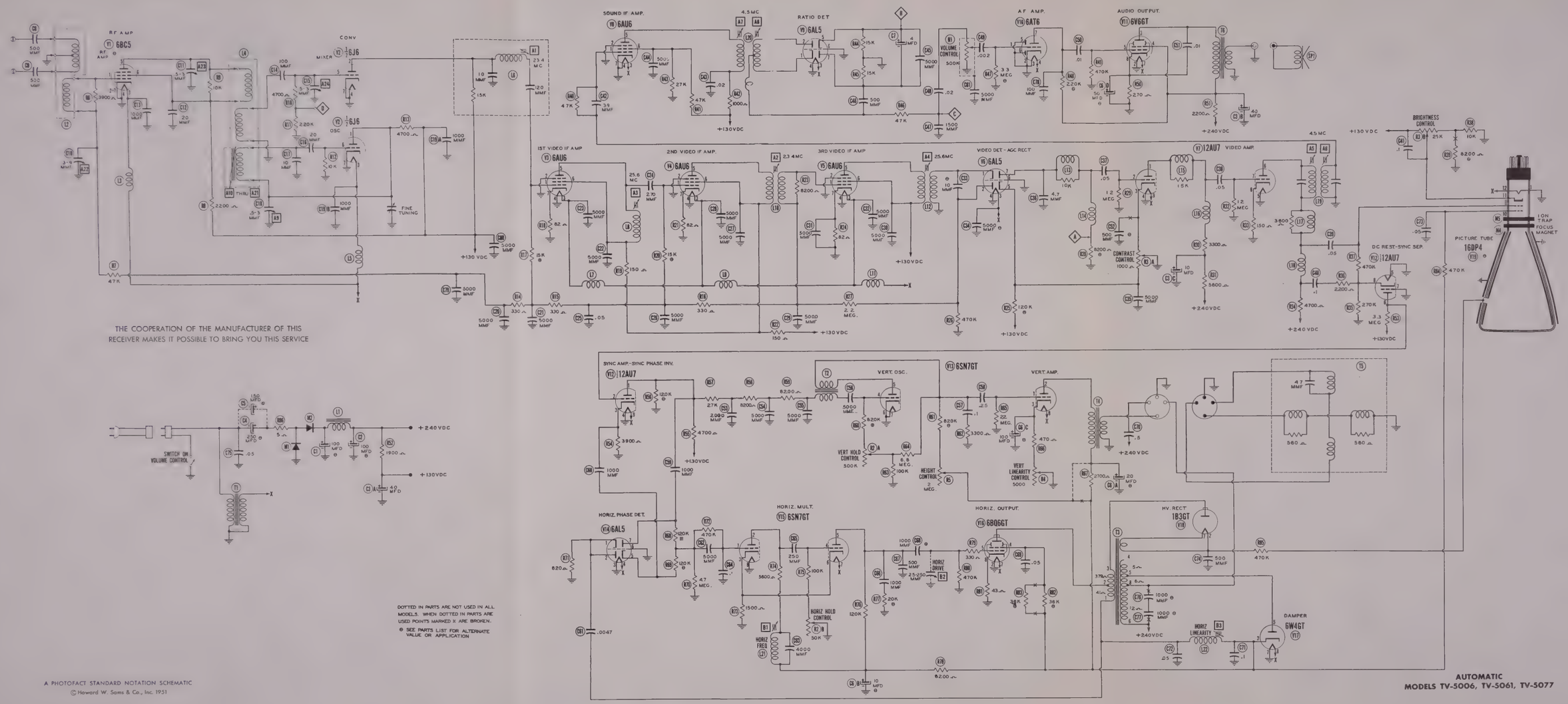

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DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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AUTOMATIC
MODELS TV-5006, TV-5061, TV-5077

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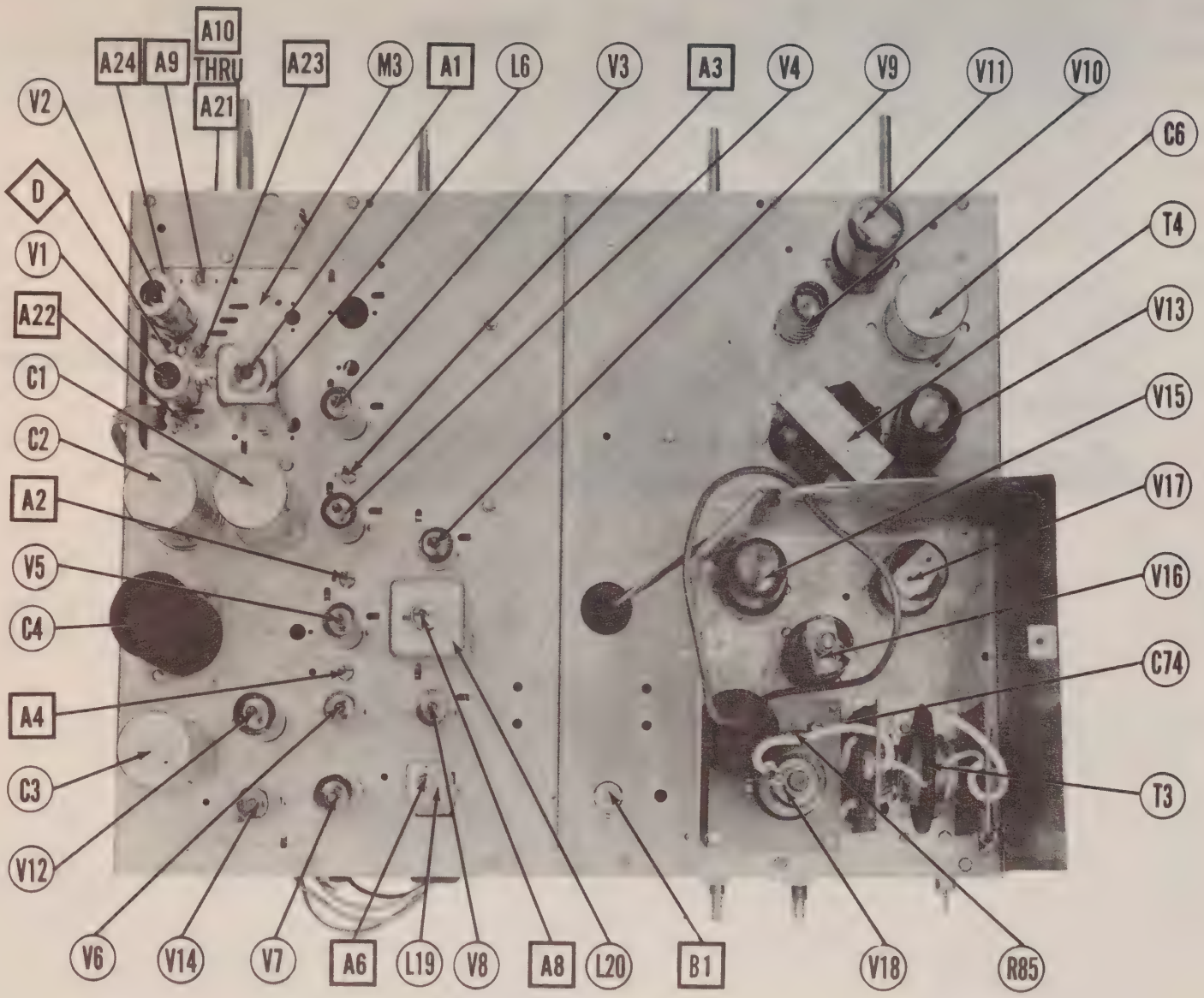
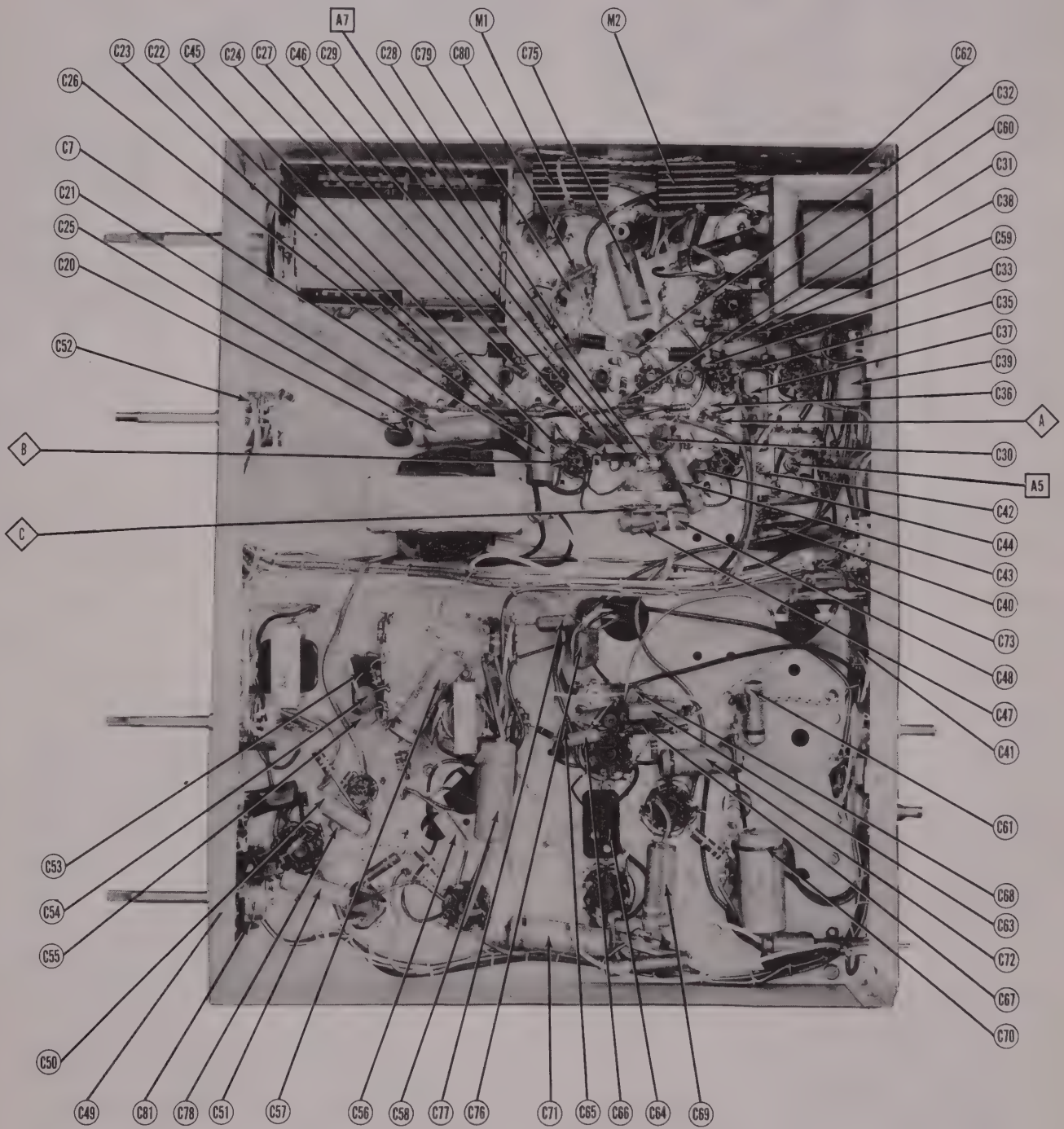
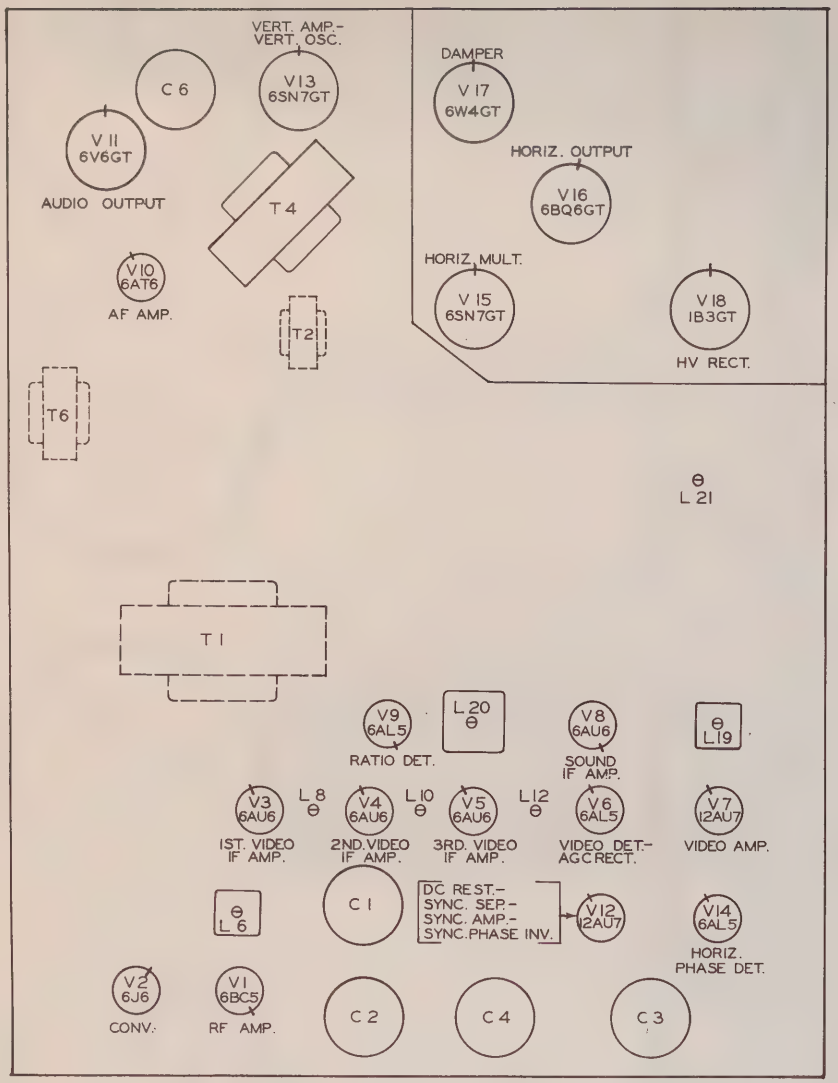


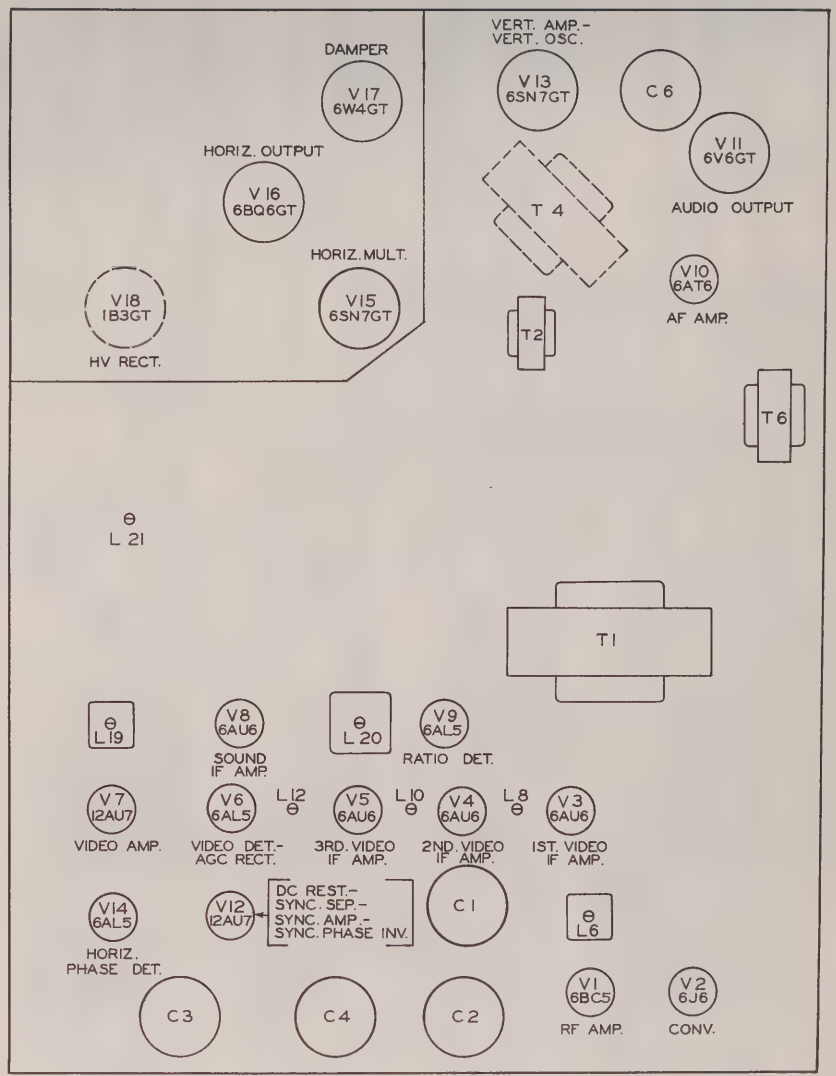
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage. Do not operate the set without the deflection yoke connected.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C25, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield, floating over dummy converter tube, (V2). Low side to chassis	23.4MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	25.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.25MC 25.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.04MFD.	High side to pin 7 (Grid), of 12AU7, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A5, A6, A7	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to Point (C). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD.	High side to pin 7, (Grid) of 12AU7, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A8	Adjust A8 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A9. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A9 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A10	Adjust to place video marker at 50% as per fig. 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A11	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A12	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A13	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A14	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A15	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A16	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A17	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A18	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A19	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A20	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A21	

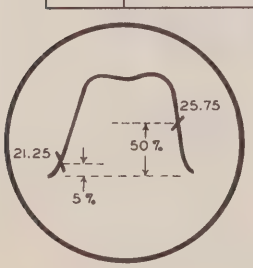


FIG. 1

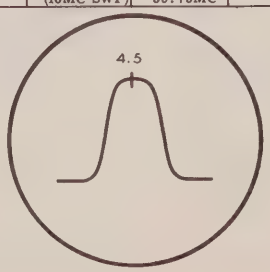


FIG. 2

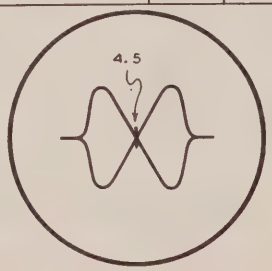


FIG. 3

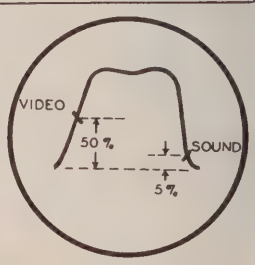


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point ◇. Low side to chassis.	A22, A23, A24	Adjust for response curve similar to fig. 5 with markers above 90%.
8.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check for response curve similar to fig. 5. If markers fall below 70% on any channel, make slight adjustment of A22, A23, and A24 with channel selector set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

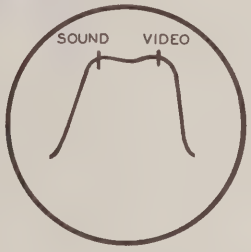


FIG. 5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.4VDC	0V	6.3VAC	0V	95VDC	95VDC	0V		
V 2	6J6	90VDC	75VDC	6.3VAC	0V	1.8VDC	§-3.2VDC	0V		
V 3	6AU6	-.3VDC	0V	6.3VAC	0V	130VDC	130VDC	.5VDC		
V 4	6AU6	-.3VDC	0V	6.3VAC	0V	130VDC	130VDC	.5VDC		
V 5	6AU6	-.3VDC	0V	6.3VAC	0V	130VDC	130VDC	.5VDC		
V 6	6AL5	0V	0V	6.3VAC	0V	0V .8VDC	0V	-.2VDC		
V 7	12AU7	125VDC	0V	0V 6VDC	0V	0V	170VDC	0V	2.6VDC	6.3VAC
V 8	6AU6	-.4VDC	0V	6.3VAC	0V	125VDC	47VDC	0V		
V 9	6AL5	0V	0V	6.3VAC	0V	.3VDC	0V	-.3VDC		
V 10	6AT6	-.5VDC	0V	0V	6.3VAC	0V	0V	60VDC		
V 11	6V6GT	0V	0V	160VDC	170VDC	0V	240VDC	6.3VAC	9.5VDC	
V 12	12AU7	85VDC	26VDC	28VDC	0V	0V	26VDC	0V	2.6VDC	6.3VAC
V 13	6SN7GT	§.2VDC	370VDC	8.4VDC 18VDC	§-6.2VDC	55VDC 120VDC	0V	0V	6.3VAC	
V 14	6AL5	0V	0V	0V	6.3VAC	.6VDC	0V	-5.7VDC		
V 15	6SN7GT	§-.6VDC	275VDC	12VDC	§-11VDC	140VDC	12VDC	6.3VAC	0V	†
V 16	6BQ6GT	0V	0V	0V	130VDC	-16VDC	0V	6.3VAC	4.5VDC	Top Cap *
V 17	6W4GT	320VDC	0V	375VDC	0V	235VDC	0V	0V	6.3VAC	
V 18	1B3GT	* DO NOT MEASURE								Top Cap *
V 19	16DP4	0V	.8VDC	PIN 10 360VDC	PIN 11 30VDC 125VDC	PIN 12 6.3VAC	H. V. CONNECTOR 8KV **			

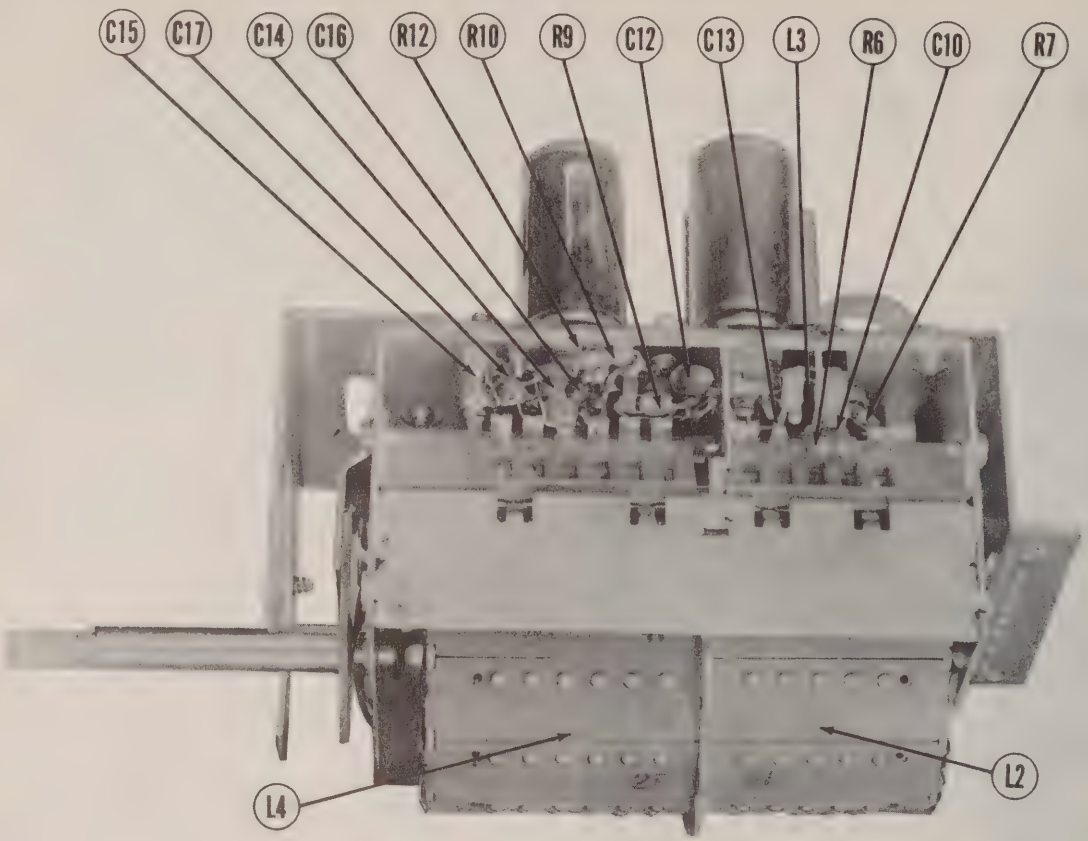
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
* DO NOT MEASURE
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE
§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

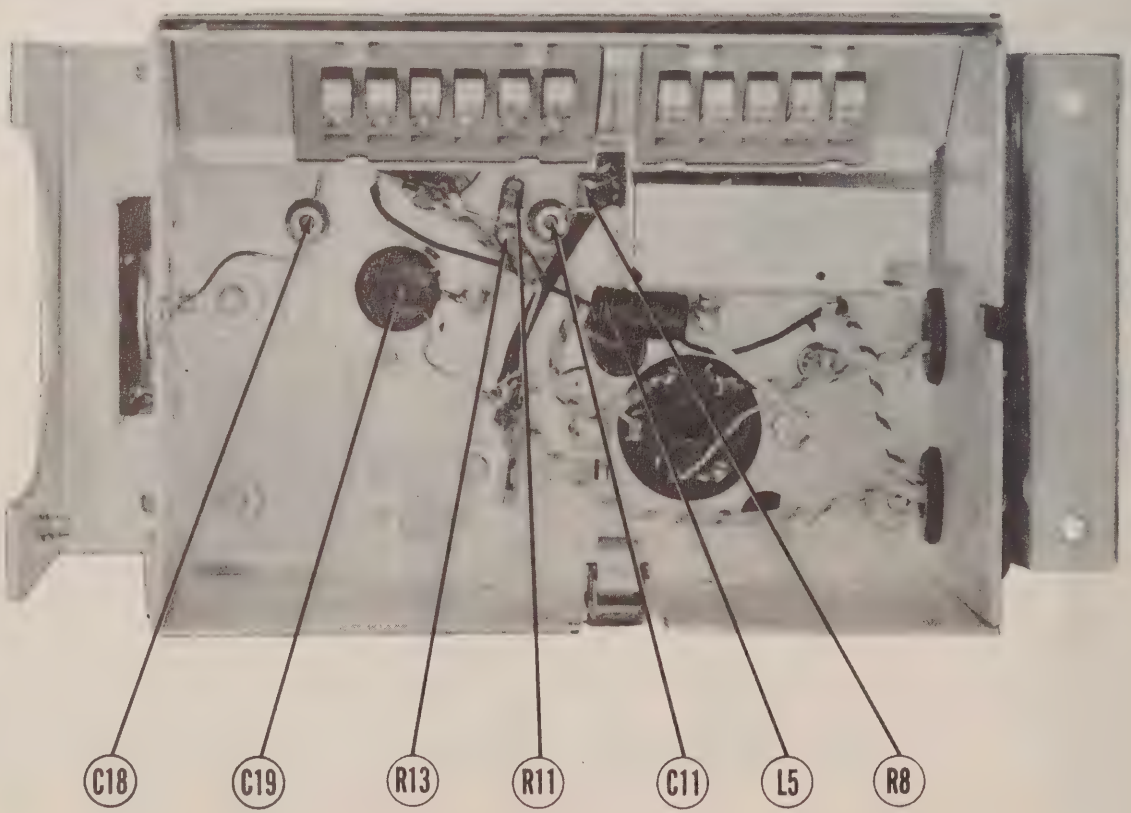
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2.7Meg	0Ω	.1Ω	0Ω	†4.1KΩ	†4.1KΩ	0Ω		
V 2	6J6	†6.6KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AU6	2.7Meg	0Ω	.1Ω	0Ω	†2.1KΩ	†2.1KΩ	82Ω		
V 4	6AU6	2.7Meg	0Ω	.1Ω	0Ω	†2KΩ	†2KΩ	82Ω		
V 5	6AU6	2.7Meg	0Ω	.1Ω	0Ω	†1.9KΩ	†1.9KΩ	82Ω		
V 6	6AL5	.1Ω	470KΩ	.1Ω	0Ω	1KΩ 0Ω	0Ω	8.2KΩ		
V 7	12AU7	†9KΩ	1.2Meg	1KΩ 0Ω	0Ω	0Ω	†4.7KΩ	1.2Meg	150Ω	.1Ω
V 8	6AU6	47KΩ	0Ω	.1Ω	0Ω	†2.9KΩ	†22KΩ	0Ω		
V 9	6AL5	Inf.	Inf.	.1Ω	0Ω	15KΩ	0Ω	15KΩ		
V 10	6AT6	3.3Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†220KΩ		
V 11	6V6GT	0Ω	0Ω	†2.5KΩ	†2.2KΩ	470KΩ	†28Ω	.1Ω	270Ω	
V 12	12AU7	†6.6KΩ	†3.3Meg	3.9KΩ	0Ω	0Ω	†3.3Meg	0Ω	270KΩ	.1Ω
V 13	6SN7GT	2.2Meg	#4KΩ	5.4KΩ 470Ω	1.4Meg 920KΩ	#2.8Meg #820KΩ	0Ω	0Ω	.1Ω	
V 14	6AL5	820Ω	820Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	6SN7GT	5.2Meg	#13KΩ	1.5KΩ	150KΩ 100KΩ	#128KΩ	1.5KΩ	.1Ω	0Ω	
V 16	6BQ6GT	Inf.	0Ω	0Ω	#18KΩ	470KΩ	Inf.	.1Ω	43Ω	Top Cap #75Ω
V 17	6W4GT	170KΩ	Inf.	170KΩ	Inf.	†46Ω	Inf.	0Ω	.1Ω	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #455Ω
V 19	16DP4	0Ω	740KΩ	PIN 10 #470KΩ	PIN 11 †12KΩ †1.9KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM OUTPUT OF M2
# MEASURED FROM PIN 3 OF V17

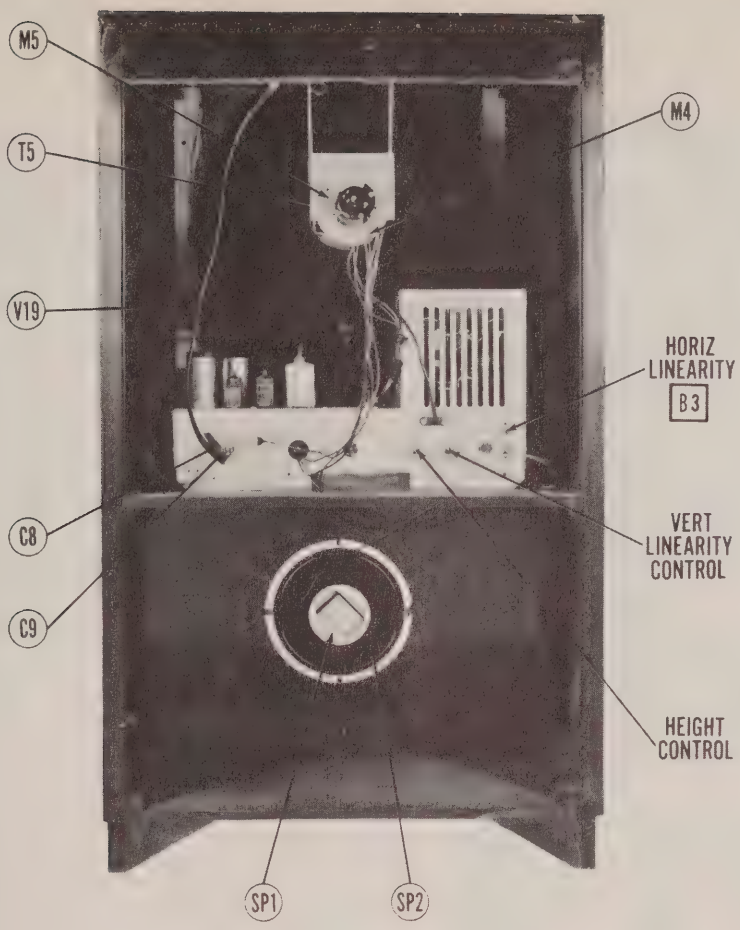
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise as far as possible without crowding or bright vertical lines appearing in the picture. NOTE: Some chassis do not have a drive trimmer.

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove seven push-on type control knobs.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect speaker.
5. Disconnect picture tube socket.
6. Disconnect high voltage lead.
7. Disconnect yoke cable.
8. Remove four metal screws from chassis. Remove chassis.
9. Remove two wind nuts from speaker. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BC5	6BC5	7BD	
B	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Amplifier	12AU7	12AU7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amplifier	6AT6	6AT6	7BT	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	DC Restorer-Sync. Separator-Sync. Amplifier-Sync. Phase Inverter	12AU7	12AU7	9A	
V13	Vert. Oscillator-Vert. Amplifier	6SN7GT	6SN7GT	8BD	
V14	Horiz. Phase Det.	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V19A	[illegible]	16JP4 ① ②	16DP4 ① ②		① Ground outer coating.
B	16AP4	16AP4	16CP4 ① ② ④		② Use single magnet ion trap.
C	12LP4	12LP4A	12LP4A ②		③ High voltage connector must be changed
					④ Glass equivalent

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	100	350	CE-10-2A	AF20E		UPE12535		TVL-1638	Filter †
C2	100	350	CE-10-2A	AF20E		UPE12535		TVL-1638	Filter †
C3A	40	350	CE-10-3	AFH822		UPT44145		TVL-3785	▲ Decoupling
B	40	350							■ Audio Output Dec.
C	10	350							▲ Decoupling
C4	250	150	CE-10-1A	AF50D		UPE30015		TVL-1434	Voltage Doubler †
C5	150	250							Voltage Doubler *
C6A	20	450	CE-10-4A	AF842J20B		UPT2150 V10		R1124	● Vert. Amp. Dec. ††
B	10	450				BR502A			■ Horiz. MV Dec. ††
C	100	25							▲ Vert. Amp. Cathode
C	50	25							Audio Output Cathode
C7	4	25		PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C8	500	500		1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	RF Coupling
C9	500	500		1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	RF Coupling
C10	3-9				829-10				Variable Trimmer
C11	.5-3				829-3				Variable Trimmer
C12	120			SI120	D6-121		GP2K-121	5GA-T12	RF Bypass
C13	1000			SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C14	100			SI100N750	TCN-100		N750L-101	5TCU-T1	RF Coupling
C15	.5-3				829-3				Variable Trimmer
C16	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C17	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C18	.5-3				829-3				Variable Trimmer
C19A	1000			BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Bypass
B	1000								Conv. Fil.
C20	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	AGC Filter
C21	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	AGC Filter
C22	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	1st. Video IF Dec.
C23	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	1st. Video IF Fil.
C24	270			SI270	D6-271	5R5T3	GP2K-271	5GA-T27	IF Coupling
C25	5000	600		P688-05	DF-503	PTE6S5		6TM-S5	AGC Filter
C26	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	AGC Filter
C27	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	2nd. Video IF Dec.
C28	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	2nd. Video IF Fil.
C29	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	AGC Filter
C30	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	2nd. Video IF Dec.
C31	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	2nd. Video IF Cathode
C32	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	2nd. Video IF Fil.
C33	10			SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	IF Coupling ¶
C34	5000			BPD-005	DD-502	ID5D5	811-006	5HK-D5	Video Det. Fil. *
C35	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	RF Bypass
C36	4.7			SI4.7NP0	TCZ-4.7		NP0K-4R7		Video Det. Filter
C37	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C38	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C39	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C40	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C41	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C42	39			SI39	D6-390	5W5Q4	GP1K-390		Sound IF Grid
C43	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Sound IF Plate
C44	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	Sound IF Screen
C45	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	RF Bypass
C46	500	500		1489-0005		5R5T5		MS-35	Diode Load Cap.
C47	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	De-emphasis
C48	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C49	.002	400		P688-002	D6-202	PTE5D2		6TM-D2	Audio Coupling
C50	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C51	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C52	500			SI500	D6-501	5W5T5	GP2K-501	5GA-T5	Video Amp. Cathode *

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	1FM-22	Vert. Integrator Net.
C54	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	Vert. Integrator Net.
C55	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	Vert. Integrator Net.
C56	5000	500		1467-005	D6-502	ID5D5	GP2-333-502	1FM-25	Vert. Sync. Coupling
C57	.1	600		P688-1	DF-104	PTE4P1		6TM-P1	Vert. Discharge
C58	.25	400		P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C59	1000			SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C60	1000			SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C61	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Horiz. Feedback
C62	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	Horiz. Sync. Coupling
C63	4000	500		1464-004		IDR5D4		MS-24	Fixed Trimmer
C64	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Horiz. MV Grid
C65	250	500		1469-00025		5R5T25			Horiz. MV Feedback
C66	1000	500		1468-001	D6-102	1W5D5	GP2L-102	1FM-21	Horiz. Discharge
C67	500	500		1469-0005		5R5T5		MS-35	Horiz. Discharge
C68	1000	500		1468-001	D6-102	1W5D5	GP2L-102	1FM-21	Horiz. Sweep Coupling ††
C69	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C70	.5	400		484-5		GT4P5		4TM-P5	Horiz. Sweep Coupling
C71	.1	600		P688-P1		PTE6P1		6TM-P1	Damper Filter
C72	.05	600		P688-05		PTE6S5		6TM-S5	Damper Filter
C73	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Accelerating Anode
C74	500	20000		HV20C	TV3-501				HV Filter
C75	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Line Filter
C76	1000	500		1468-001		1W5D5		1FM-21	Fixed Trimmer *
C77	1000	500		1468-001		1W5D5		1FM-21	Fixed Trimmer *
C78	100			SI100	D6-101		GP1K-101	5HK-T1	AF Amp. Plate
C79	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	AGC Filter
C80	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	RF Bypass
C81	5000			BPD-005	DD-502	ID5D5	811-005	5HK-D5	Volume Control Isolation

* Not used in all models.
† Some models use 120MFD at 400V in this application.
‡ Some models use 150MFD at 250V in this application.
¶ Some models use 100MMF in this application.
†† Some models use 30MFD in this application.
‡‡ Some models use 15MFD in this application.
¶¶ Some models use 5000MMF in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	TRV-75	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions
R2A	500KΩ	½	TRV-95	Concentrikit B11-133 ♯	RTV-57		Vert. Hold Control - Front
B	50KΩ	½		B11-123 ♯			Horiz. Hold Control - Rear
C	Shaft end			E-202 ♯			Attach per instructions in Concentrikit
R3A	1000Ω	½	TRV-76	Concentrikit B11-108 ♯	RTV-134		Contrast Control - Front
B	25KΩ	½		B11-120 ♯			Brightness Control - Rear
C	Shaft end			E-202 ♯			Attach per instructions in Concentrikit
R4A	5000Ω	½	TRV-91	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	RQ	FKB-1/4	AK-1	Attach to R4A per instructions
R5A	2MΩ	½	TRV-90	Q11-139	AM-83-S	AN-75	Height Control
B	Shaft		Not req.	RQ	FKB-1/4	AK-1	Attach to R5A per instructions

♯ Additional parts to be used with Concentrikit

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R6	3900Ω	½		BTS-3900	Antenna Coil Shunt
R7	47KΩ 20%	½		BTS-47K	AGC Network
R8	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R9	10KΩ	½		BTS-10K	RF Coil Shunt
R10	4700Ω	½		BTS-4700	Mixer Grid
R11	220KΩ 20%	½		BTS-220K	Mixer Grid
R12	10KΩ	½		BTS-10K	Osc. Grid
R13	4700Ω	½		BTS-4700	Osc. Plate
R14	330Ω 20%	½		BTS-330	AGC Network
R15	330Ω 20%	½		BTS-330	AGC Network
R16	330Ω 20%	½		BTS-330	AGC Network
R17	15KΩ 20%	½		BTS-15K	1st. Video IF Amp. Grid - See Note 2
R18	82Ω	½		BTS-82	1st. Video IF Amp. Cathode
R19	150Ω 20%	½		BTS-150	1st. Video IF Amp. Decoupling
R20	15KΩ 20%	½		BTS-15K	2nd. Video IF Amp. Grid - See Note 3
R21	82Ω	½		BTS-82	2nd. Video IF Amp. Cathode
R22	150Ω 20%	½		BTS-150	Decoupling
R23	8200Ω	½			3rd. Video IF Transformer Shunt
R24	82Ω	½		BTS-82	3rd. Video IF Amp. Cathode
R25	120KΩ	½		BTS-120K	Voltage Divider - See Note 4
R26	470KΩ 20%	½		BTS-470K	AGC Rectifier Load
R27	2.2MeG 5%	½		BTS-2.2MeG-5%	AGC Network
R28	8200Ω	½		BTS-8200	Video Det. Diode Load - See Note 5
R29	1.2MeG 20%	½		BTS-1.2MeG	Video Amp. Grid
R30	3300Ω	1		BTA-3300	Video Amp. Plate
R31	5600Ω	2		BTB-5600	Video Amp. Decoupling
R32	1.2MeG 20%	½		BTS-1.2MeG	Video Amp. Grid
R33	150Ω 20%	½		BTS-150	Video Amp. Cathode
R34	4700Ω 20%	1		BTA-4700	Video Amp. Plate
R35	270KΩ	½		BTS-270K	DC Restorer Diode Load
R36	2200Ω 20%	½		BTS-2200	Isolation
R37	470KΩ 20%	½		BTS-470K	Picture Tube Grid
R38	10KΩ 20%	½		BTS-10K	Picture Tube Cathode
R39	8200Ω	½		BTS-8200	Picture Tube Cathode - See Note 1
R40	47KΩ 20%	½		BTS-47K	Sound IF Amp. Cathode
R41	47KΩ 20%	½		BTS-47K	Sound IF Amp. Screen
R42	1000Ω 20%	½		BTS-1000	Sound IF Amp. Plate Decoupling
R43	27KΩ 20%	½		BTS-27K	Voltage Divider
R44	15KΩ	½		BTS-15K	Ratio Det Diode Load
R45	15KΩ	½		BTS-15K	Ratio Det. Diode Load

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	47KΩ 20%	½		BTS-47K	De-emphasis
R47	3.3Meg 20%	½		BTS-3.3Meg	AF Amp. Grid - See Note 8
R48	220KΩ	1		BTA-220K	AF Amp. Plate - See Note 7
R49	470KΩ 20%	½		BTS-470K	Output Grid
R50	270Ω 20%	1		BTA-270	Output Cathode
R51	2200Ω	10		1 3/4A-2250	Decoupling - Wire Wound
R52	1900Ω	10		1 3/4A-3000	Voltage Divider - Wire Wound
R53	3.3Meg 20%	½		BTS-3.3Meg	Sync. Sep. Plate
R54	3900Ω	½		BTS-3900	Sync. Amp. - Phase Inv. Cathode
R55	4700Ω	½		BTS-4700	Sync. Amp. - Phase Inv. Plate
R56	120KΩ	½		BTS-120K	Voltage Divider - See Note 4
R57	27KΩ 20%	½		BTS-27K	Integrator
R58	8200Ω	½		BTS-8200	Integrator
R59	8200Ω	½		BTS-8200	Integrator
R60	820KΩ	½		BTS-820K	Vert. Osc. Grid - See Note 8
R61	820KΩ	1		BTA-820K	Vert. Osc. Phase - See Note 9
R62	3300Ω	½		BTS-3300	Vert. Peaking
R63	100KΩ	½		BTS-100K	Voltage Divider
R64	6.8Meg 20%	½		BTS-6.8Meg	Voltage Divider
R65	2.2Meg 20%	½		BTS-2.2Meg	Vert. Amp. Grid
R66	470Ω 20%	½		BTS-470	Vert. Amp. Cathode
R67	2700Ω	1		BTA-2700	Vert. Amp. Decoupling
R68	120KΩ	½		BTS-120K	Horiz. Phase Det. Diode Load - See Note 4
R69	120KΩ	½		BTS-120K	Horiz. Phase Det. Diode Load - See Note 4
R70	4.7Meg	½		BTS-4.7Meg	Horiz. Phase Det. Diode Load
R71	820Ω 20%	½		BTS-820	Horiz. Feedback
R72	470KΩ 20%	½		BTS-470K	Horiz. AFC Filter
R73	1500Ω	½		BTS-1500	Horiz. MV Cathode
R74	5600Ω	½		BTS-5600	Horiz. MV Plate
R75	100KΩ	½		BTS-100K	Horiz. MV Grid
R76	120KΩ	½		BTS-120K	Horiz. MV Plate
R77	20KΩ 20%	½		BTS-22K	Horiz. Peaking - See Note 10
R78	8200Ω 5%	2		BTB-8200-5%	Horiz. MV Decoupling
R79	330Ω 20%	½			Parasitic Suppressor
R80	470KΩ 20%	½		BTS-470K	Horiz. Output Grid
R81	43Ω	1		BW-1-43	Horiz. Output Cathode
R82	36KΩ	2			Horiz. Output Screen } See Note 11
R83	36KΩ	2			Horiz. Output Screen }
R84	470KΩ 20%	½		BTS-470K	Acc Anode Load
R85	470KΩ	2		BTB-470K	HV Filter
R86	5Ω	5		1 3/4A-5	Surge Limiter - Wire Wound

Note 1 Not used in all models
Note 2 Some models use 10KΩ resistor in this application.
Note 3 Some models use 22KΩ Resistor in this application.
Note 4 Some models use 100KΩ Resistor in this application.
Note 5 Some models use 4700Ω Resistor in this application.
Note 6 Some models use 10Meg Resistor in this application.
Note 7 Some models use 390Ω Resistor in this application.
Note 8 Some models use 1Meg Resistor in this application.
Note 9 Some models use 1.2Meg Resistor in this application.
Note 10 Some models use 120KΩ Resistor in this application.
Note 11 Some models use single 18KΩ 4 watt Resistor in this application.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	6.3VAC ② 8A			T-12		P-2948 ⑤	FO-610 ⑤
	② .5A							

⑤ Drill one new mounting hole.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	205Ω	1.3KΩ	LA-449	A-8111	A-3000 ⑤	TBO-1 ⑤	Vert. Block Osc. Trans.
T3	420Ω	23Ω	GE-7TJ1	A-8130	HVO-7		Horiz. Output Trans.
	Tap 41Ω	Taps 12Ω and 18Ω					
		SEC. 2 0Ω					
T4	13.KΩ	1Ω	NE664-6	A-8112 ⑤	A-3036 ⑤ MDF-70	TSO-2 ⑤	Vert. Output Trans. Horiz. Deflection Coils
T5A	13Ω						Vert. Deflection Coils.
B	64Ω						

⑤ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	4.5KΩ	3.2Ω	285Ω	.42Ω		A-3849 ⑤	A-2930 ⑤	RO-9 ⑤	⑤ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
	FIELD. RES.	V. C. IMP.				
SP1	PM	3.2Ω	PM908	ST115 Model P8-V	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 3/8"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.225A	26.5Ω	1Henry		C-2326 ⑤	C-2996 ⑤	TR-3300⑤	

⑤ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid and Osc. Coil	0Ω				
L5	Fil. Choke	0Ω				
L6	1st. Video IF	1Ω		IF-21		Complete Part # 31A-054
L7	Fil. Choke	0Ω				
L8	2nd. Video IF	.3Ω		IF-22		
L9	Fil. Choke	0Ω				
L10	3rd. Video IF	.3Ω	.2Ω	IF-23		
L11	Fil. Choke	0Ω				
L12	4th. Video IF	.3Ω	.1Ω	IF-24		
L13	Peaking	8.5Ω			19-1921 †	160 Microhenries wound on 10KΩ resistor
L14	Peaking	20Ω				700 Microhenries
L15	Peaking	8.5Ω			19-1921 ▲	160 Microhenries wound on 150KΩ resistor
L16	Peaking	12Ω			19-1922	290 Microhenries
L17	Peaking	10Ω			19-1922 ■	205 Microhenries wound on 3.6KΩ resistor
L18	Peaking	11Ω			19-1922	235 Microhenries
L19	Sound IF	1.6Ω	1.6Ω	ST-10		
L20	Ratio Det. Trans.	6.7Ω	.6Ω	RD-7		Tap .6Ω
L21	Horiz. Osc.	110Ω		0-10		
L22	Horiz. Lin.	33Ω		HL-10		

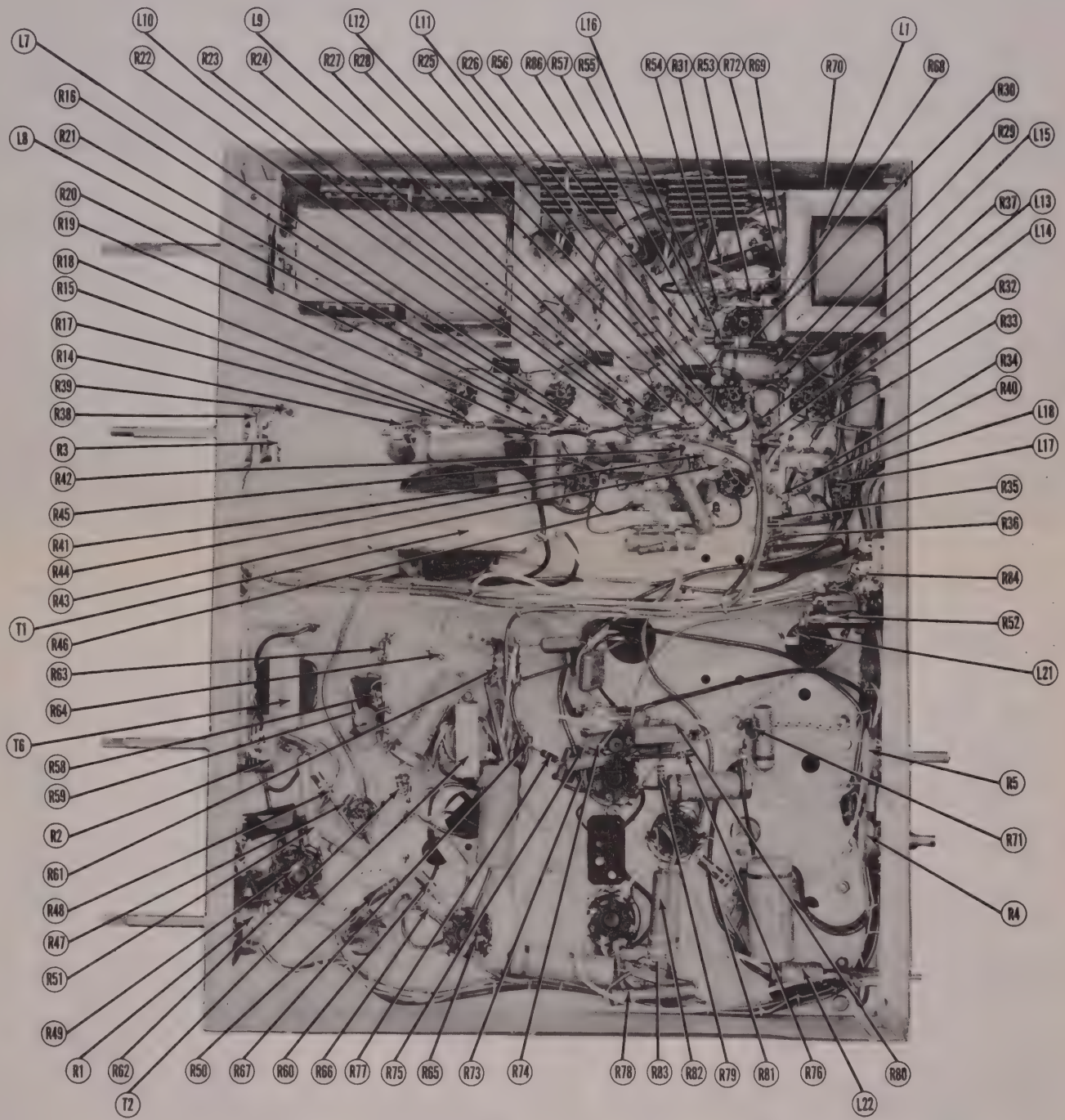
† Parallel with 10KΩ resistor
▲ Parallel with 15KΩ resistor
■ Parallel with 3.6KΩ resistor

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	AUTOMATIC PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.225A		NF-5	5Q1	
M2	.225A		NF-5	5Q1	

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	RF Tuner		
M4	Focus Magnet		
M5	Ion Trap		
B2	Trimmer		25-250MMF (not used in all models)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

CORONADO MODELS 05TV1-43-8945A, 05TV1-43-9005A, 05TV1-43-9006A

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MODEL 05TV1-8945A

CORONADO MODELS 05TV1-43-8945A, 05TV1-43-9005A, 05TV1-43-9006A

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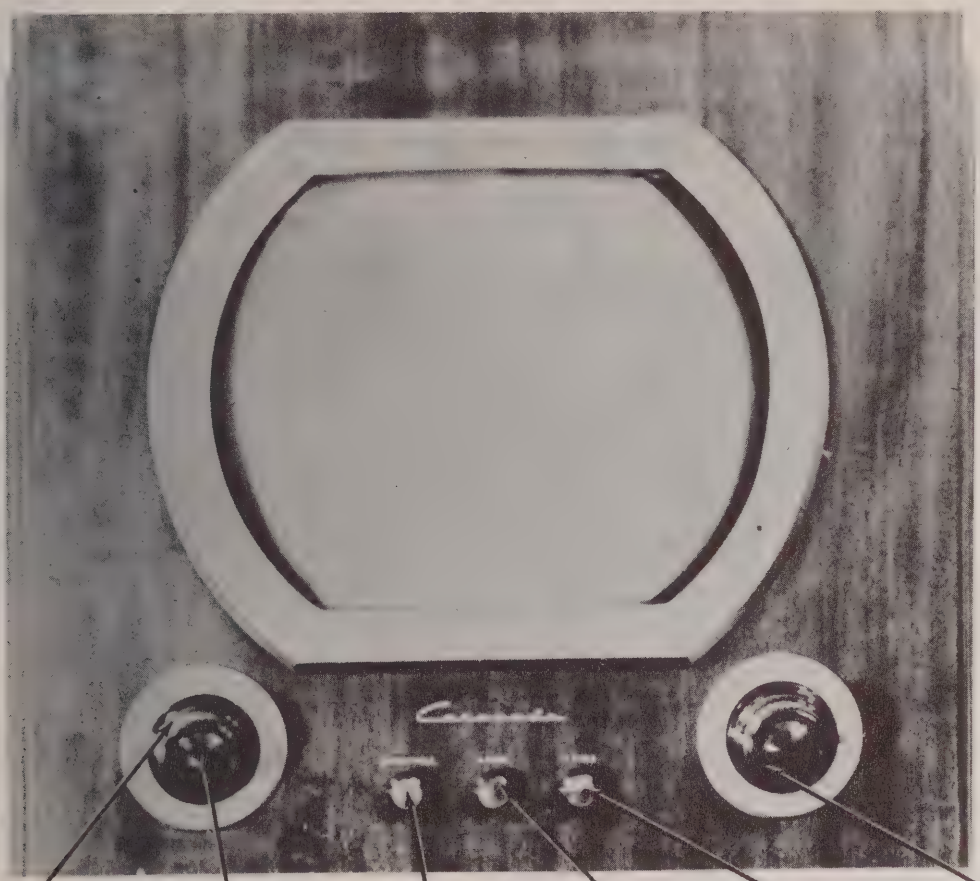

CORONADO MODELS 05TV1-43-8945A, 05TV1-43-9005A, 05TV1-43-9006A

CORONADO MODEL 05TV1-43-8945A

TRADE NAME	Coronado, Models 05TV1-43-8945A, 05TV1-43-9005A, 05TV1-43-9006A
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th St., Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Twenty One

POWER SUPPLY 1 10-115 Volts AC-60 Cycle RATING 1.8 Amp. @ 115 Volts AC
TUNING RANGE—Channels 2 Thru 13

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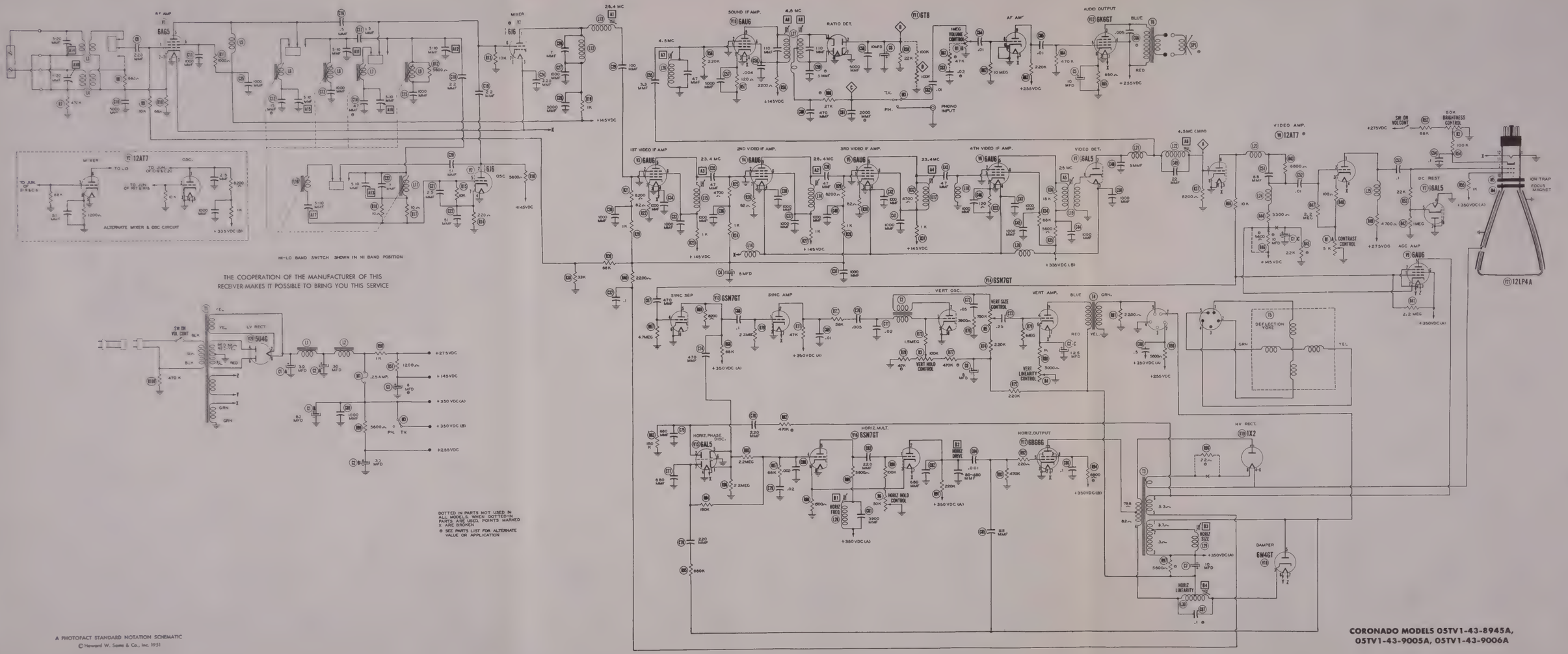
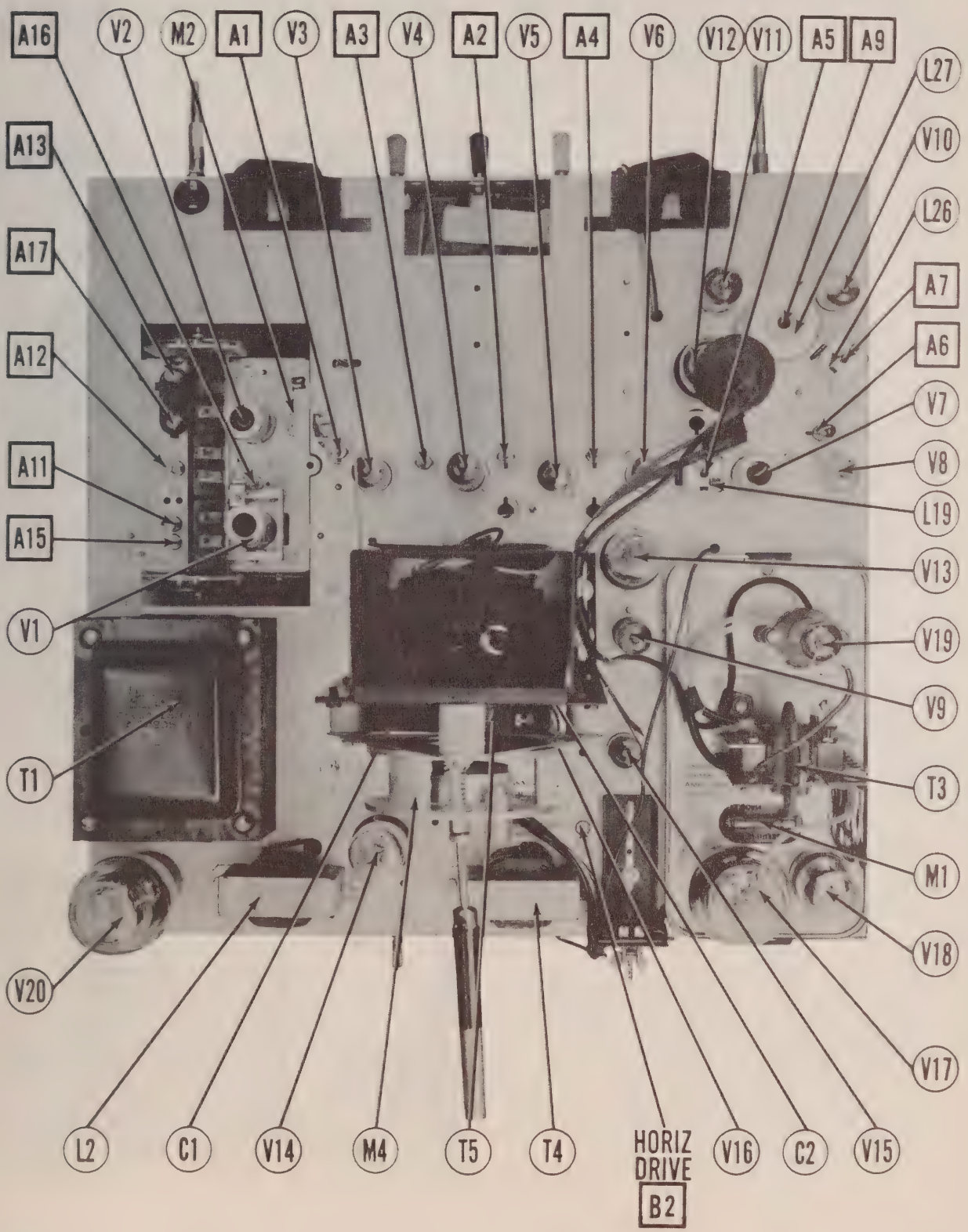
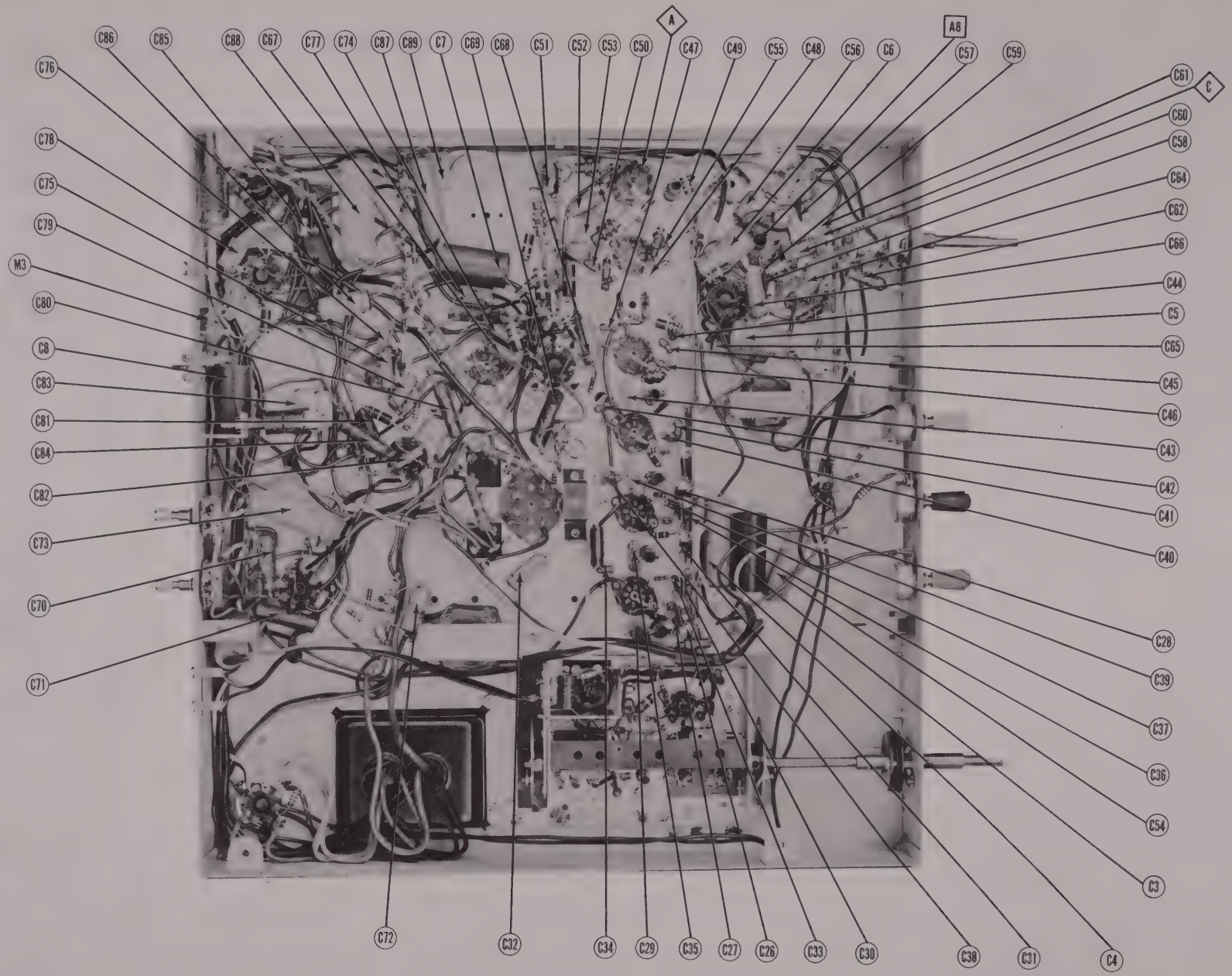


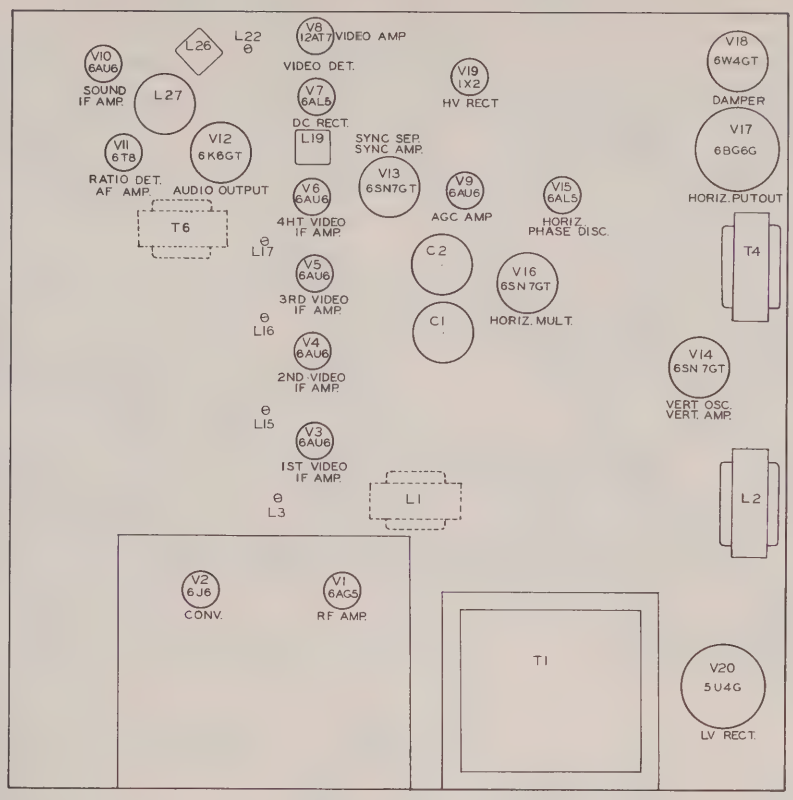
CORONADO MODELS 05TV1-43-8945A,
05TV1-43-9005A, 05TV1-43-9006A



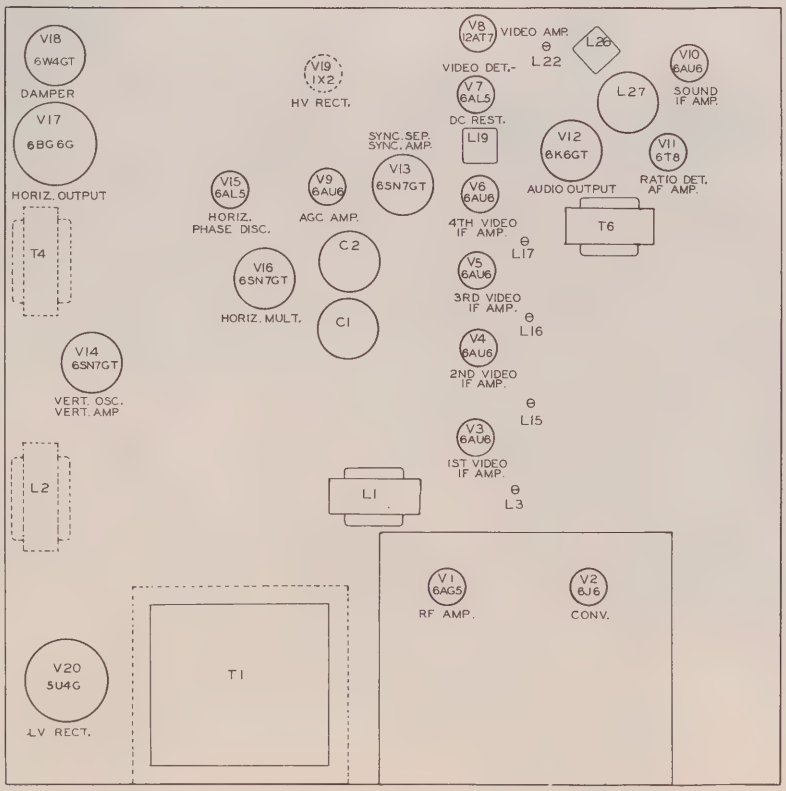
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Note: In later productions the 6J6, converter, has been replaced with a 12AT7. In that event use a 12AT7 with pin 1 removed.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis	26.4MC	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal gen. to maintain 1 volt reading.
2.	"	"	23.4MC	"	"	A3, A4	"
3.	"	"	25MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis	24MC (10MC SWP)	23MC 26.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD.	High side to pin 1 (cathode of 6AL5, (V7). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400% indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to B-. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A9	Reconnect capacitor C6. Adjust A9 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Remove the dummy converter tube and replace the original tube in its socket.
Pre-set the trimmer screws as shown in figure 5.
With the switch is low band position, turn the tuner core carriage to the extreme top of its travel.
Check to see that the cores project 1.6ins. out of the coils, then turn the low band oscillator core on additional four turns out of the coil, (counter-clockwise).

LOW BAND ALIGNMENT

Move carriage bar down 7/64 inch, from extreme top, by turning tuning control clockwise. This is the proper position for channel 6.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6 (see note above)	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, A12	Adjust for maximum response with symmetrical peaks.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as shown in fig. 4.
10.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"		Turn the tuning control until the video marker appears at 50% on the response curve for each of the low band channels, and check for proper response curve. If necessary retouch A11 and A12 for compromise adjustment which will give best response over the low band channels.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

HIGH BAND ALIGNMENT

Move the carriage bar down 7/64 inch, from extreme top, by turning tuning control counter-clockwise. This is the proper position for channel 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13 (see note above)	Vert. Amp. to Point (A) Low side to chassis.	A14, A15, A16	Adjust for maximum amplitude of response with symmetrical peaks.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% on response curve as shown in fig. 4.
13.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Turn tuning control to place video marker at 50% for each of the high band channels, and check for proper response curve. If necessary retouch A15 and A16 for compromise adjustment which will give the best response over the high band channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			

ALIGNMENT INSTRUCTIONS (CONT.)

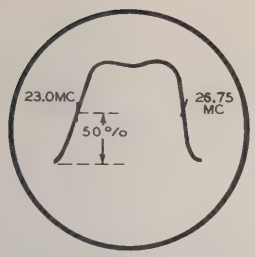


FIG. 1

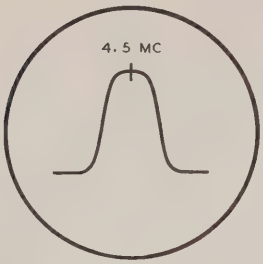


FIG. 2

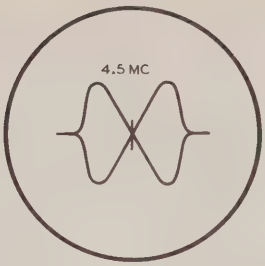


FIG. 3

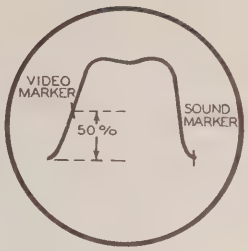


FIG. 4

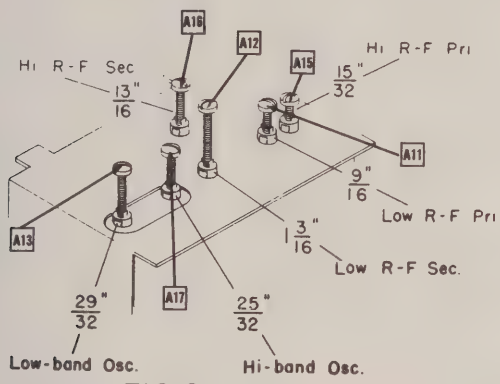
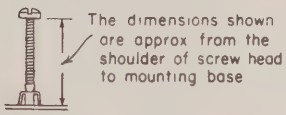
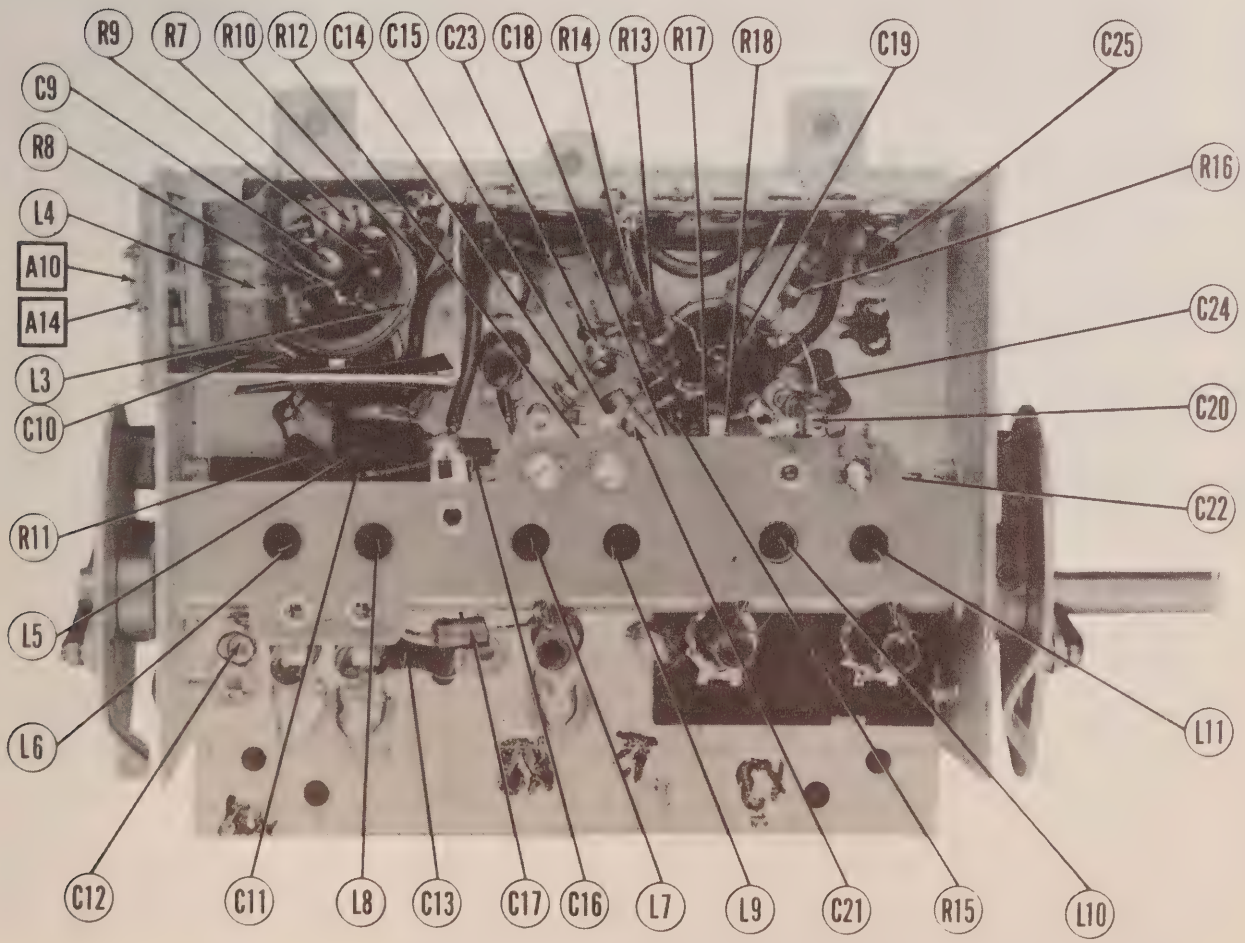


FIG. 5

ALIGNING TRIMMERS





RF TUNER - BOTTOM VIEW

CORONADO MODELS 05TV1-43-8945A, 05TV1-43-9005A, 05TV1-43-9006A

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.1VDC	.6VDC	6.3VAC	0V	145VDC	145VDC	.6VDC		
V 2	6J6	160VDC	100VDC	6.3VAC	0V	§-.8VDC	0V	3VDC		
V 3	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.9VDC		
V 4	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.9VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	138VDC	138VDC	.9VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	290VDC	140VDC	1.2VDC		
V 7	6AL5	0V	0V	6.3VAC	0V	.9VDC	0V	-2.2VDC		
V 8	12AT7	200VDC	0V	39VDC 1VDC	6.3VAC	6.3VAC	83VDC	-.3VDC	0V	0V
V 9	6AU6	85VDC	100VDC	■100VDC	■100VDC	0V	330VDC	100VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	125VDC	125VDC	1VDC		
V 11	6T8	-.2VDC	-.3VDC	-.2VDC	0V	6.3VAC	0V	0V	-.3VDC	83VDC
V 12	6K6GT	0V	0V	250VDC	255VDC	0V	0V	6.3VAC	18VDC	
V 13	6SN7GT	-.2VDC	85VDC	0V	-1VDC	35VDC	0V	6.3VAC	0V	
V 14	6SN7GT	-7.3VDC	112VDC	0V	0V	430VDC	14VDC 22VDC	6.3VAC	0V	
V 15	6AL5	2.8VDC	-.2VDC	6.3VAC	0V	2.8VDC	0V	-.2VDC		
V 16	6SN7GT	-1.6VDC	125VDC	11VDC	-.2VDC	290VDC	11VDC	6.3VAC	0V	
V 17	6BG6G	-.2VDC	0V	0V	310VDC	-14VDC	-14VDC	6.3VAC	250VDC	Top Cap *
V 18	6W4GT	330VDC	0V	445VDC	0V	330VDC	0V	■100VDC	■100VDC	
V 19	1X2	*	DO NOT MEASURE							
V 20	5U4G	0V	350VDC	0V	340VAC	0V	340VAC	330VDC	350VDC	
V 21	12LP4A	0V	6VDC	PIN 10 340VDC	PIN 11 95VDC	PIN 12 6.3VAC				

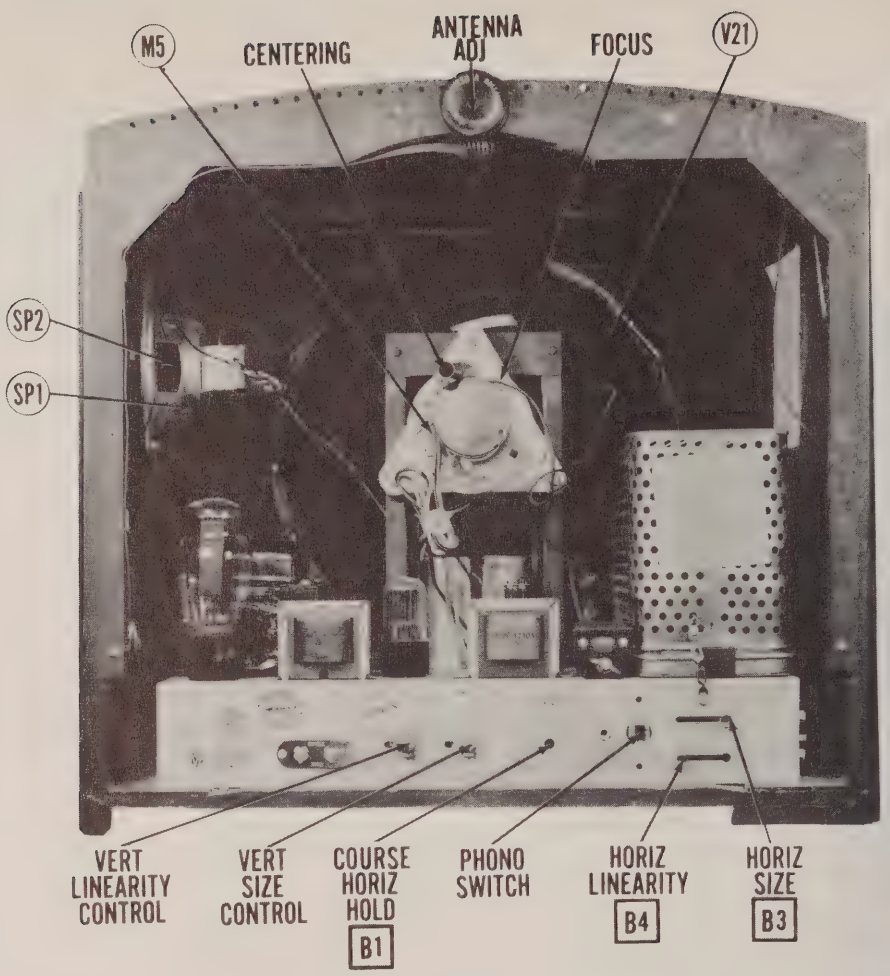
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
* DO NOT MEASURE
■ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	45KΩ	68Ω	.1Ω	0Ω	†2.4KΩ	†3.4KΩ	68Ω		
V 2	6J6	†3.2KΩ	†9KΩ	.1Ω	0Ω	10KΩ	10KΩ	220Ω		
V 3	6AU6	80KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 4	6AU6	75KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 5	6AU6	80KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 6	6AU6	2Ω	0Ω	0Ω	.1Ω	†5.8KΩ	†68KΩ	120Ω		
V 7	6AL5	1Ω	0Ω	.1Ω	0Ω	1Meg	0Ω	8.2KΩ		
V 8	12AT7	†5.6KΩ	2.2Meg	4.5KΩ	:1Ω	.1Ω	†18KΩ	8.2KΩ	0Ω	0Ω
V 9	6AU6	†30KΩ	†7.5KΩ	¶.1Ω	¶0Ω	70KΩ	†80Ω	†7.5KΩ		
V 10	6AU6	1Ω	0Ω	0Ω	.1Ω	†4:5KΩ	†4.5KΩ	120Ω		
V 11	6T8	Inf.	22KΩ	Inf.	0Ω	.1Ω	0Ω	0Ω	10Meg	†220KΩ
V 12	6K6GT	Inf.	0Ω	†3.2KΩ	†3.2KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 13	6SN7GT	2.2Meg	†47KΩ	0Ω	4.7Meg	†20KΩ	0Ω	.1Ω	0Ω	
V 14	6SN7GT	1.5Meg	▲1Meg	0Ω	1Meg	▲100Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 15	6AL5	2.2Meg	150KΩ	.1Ω	0Ω	2.2Meg	0Ω	4.5Meg		
V 16	6SN7GT	100KΩ	†220KΩ	1.5KΩ	4.5Meg	†5.6KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BG6G	4.5Meg	0Ω	0Ω	680KΩ	470KΩ	470KΩ	.1Ω	†6.8KΩ	Top Cap ▲88Ω
V 18	6W4GT	†80Ω	Inf.	200KΩ	Inf.	†80Ω	70KΩ	¶.1Ω	¶0Ω	
V 19	1X2	ALL PINS ARE INF. RESISTANCE								Top Cap 850Ω
V 20	5U4G	Inf.	20KΩ	500KΩ	32Ω	500KΩ	31Ω	20KΩ	20KΩ	
V 21	12LP4A	0Ω	1Meg	PIN 10 1.2KΩ	PIN 11 150KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V20
▲ MEASURED FROM PIN 3 OF V18
¶ MEASURED FROM JUNCTION OF R44 AND R45.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV staion, preferably a test pattern.

Turn the horizontal hold, "fine", (front panel), to the mid-position of its range.

Adjust the horizontal hold control, "coarse" slug, (B1), (rear of chassis), to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise until a fold over, (bright vertical line) appears in the picture, Then turn the trimmer clockwise until the fold over disappears and then one half turn additional.

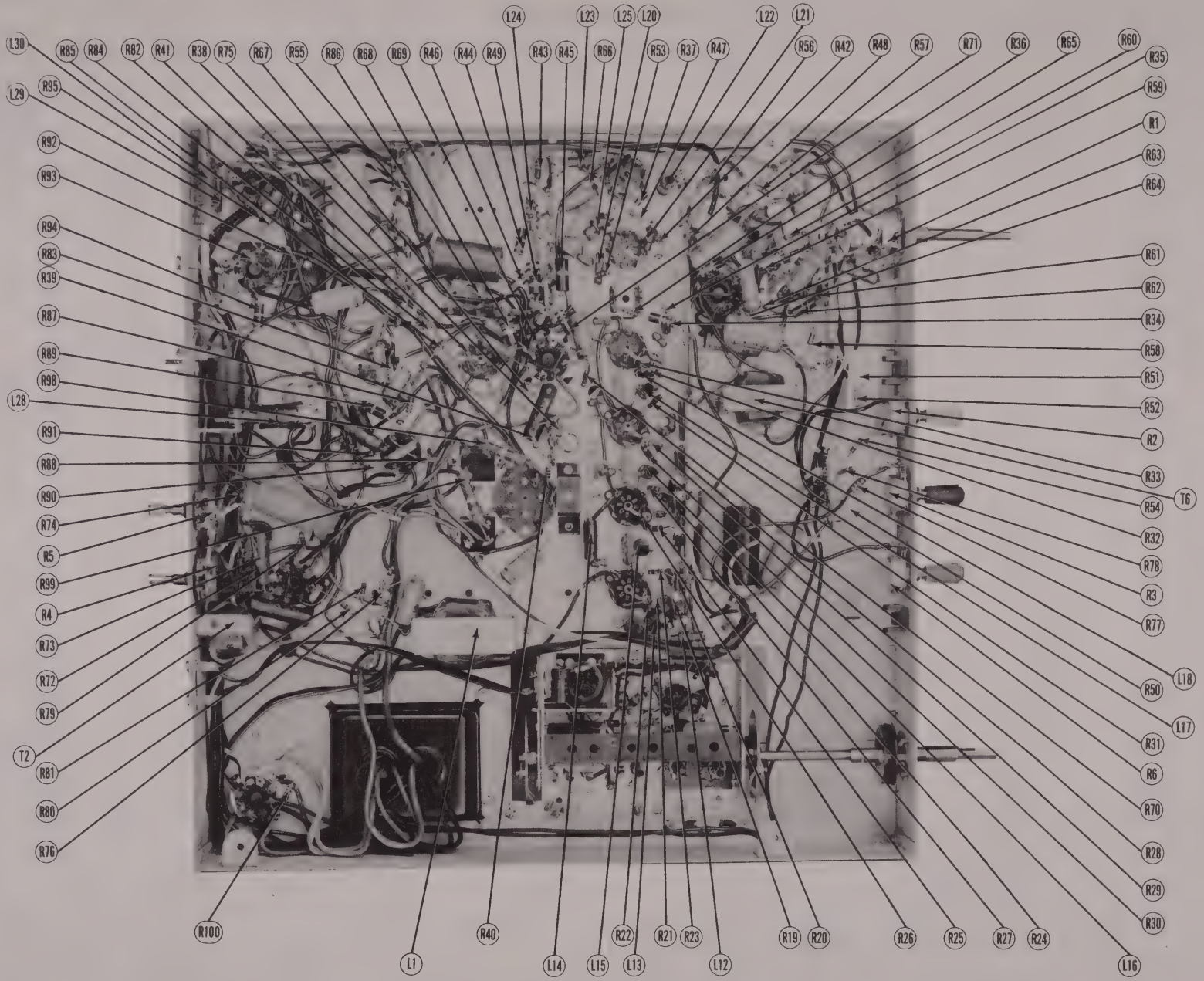
Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Slight readjustment of B2 may be necessary for optimum linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs and channel pointer.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna,
4. Disconnect speaker.
5. Remove five metal screws from chassis. Remove chassis.
6. Remove two 5/10" hex nuts from speaker. Remove speaker.

NOTE: - FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AG5	6AG5	7BD	
V2A	Converter	6J6	6J6	7BF	
B	Converter	12AT7	12AT7	9A	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V8A	Video Amplifier	12AT7	12AT7	9A	
B	Video Amplifier	12AU7	12AU7	9A	
V9	AGC Amplifier	6AU6	6AU6	7BK	
V10	Sound IF Amplifier	6AU6	6AU6	7BK	
V11	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V12	Audio Output	6K6GT	6K6GT	7S	
V13	Sync. Separator-Sync. Amplifier	6SN7GT	6SN7GT	8BD	
V14	Vert. Amplifier-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz. Phase Discr.	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GG	6W4GT	4CG	
V19	HV Rectifier	1X2	1X2	7CB	
V20	LV Rectifier	5U4G	4U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V 21	12LP4A	12LP4A	12LP4A ①		① Use single magnet ion trap.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	A-8C-17845	AFH3686J		UPT36145		TVL-3790	▲ Filter
B	60	450							■ Filter
C	10	450							▲ Decoupling
C2A	30	450	A-8C-18487	AF644J		UPT409		TVL-3741	▲ Filter
B	30	450		PRS25/100				TVA-1207	■ Audio Output Dec.
C	125	25							▲ Vert. Amp. Cathode Decoupling
C3	8	450	A-8C-13453	PRS450/8		BR645A		TVA-1704	Decoupling
C4	5	50	A-8C-11751	PRS150/4		BR550		TVA-1303	AGC Filter
C5	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Audio Output cathode
C6	10	50	A-8C-17183	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C7	10	150	A-8C-11495	PRS150/12		BR1015		TVA-1406	Decoupling
C8	8	450	A-8C-13453	PRS450/8		BR645A		TVA-1704	Decoupling
C9	220		C-8G-16045	SI220	D6-221		GP2K-221	5GA-T22	RF Coupling
C10	5000		A-8G-13962	BPD-005	DD-502		811-005	5HK-D5	RF Amp. Cathode
C11	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C12	15				TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer †
C13	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C14	4.7			SI4.7NP0	TCZ-4.7		NP0K-4R7		Fixed Trimmer #
C15	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C16	.5		A-8G-12495-7		TCZ-.5		NP0K-0R5		RF Coupling
C17	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C18	2.2		A-8G-12495-4		TCZ-2.2		NP0K-2R2		Osc. Coupling
C19	2.2		A-8G-12495-4		TCZ-2.2		NP0K-2R2		Osc. Coupling
C20	51		A-8G-11891		TCN-51		N750K-510		Osc. Feedback
C21	2.5		C-8G-15737						Osc. Grid Cap.
C22	7		C-8G-15234	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C23	51		A-8G-11891	SI51	TCN-51		GP1K-510	5GA-Q5	Mixer Cathode
C24	220		C-8G-16045	SI220	D6-221		GP2K-220	5GA-T22	Conv. Fil.
C25	1000		C-8G-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C26	7		C-8G-15234	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C27	1000		C-8G-13201	SI1000	D8-102	1W5D1	GP2L-102	5HK-D1	Conv. Plate Dec.
C28	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C29	100	500	C-8F3-8			1W5T1	GP1K-101	1FM-31	IF Coupling
C30	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C31	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C32	.1	300	C-8D-10770	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C33	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Dec.
C34	1000		C-8G-13201	SI1000	D8-102	1W5D1	GP2L-102	5HK-D1	1st. Video IF Fil.
C35	47	500	C-8F3-109	1469-00005	D6-470	5R5Q5	GP1K-470	MS-45	IF Coupling
C36	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C37	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C38	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C39	47	500	C-8F3-109	1468-00005	D6-470	5R5Q5	GP1K-470	MS-45	IF Coupling
C40	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	AGC Filter
C41	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Dec.
C42	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C43	47	500	C-8F3-109	1468-00005	D6-470	5R5Q5	GP1K-470	MS-45	IF Coupling
C44	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Plate
C45	1000		C8G-18201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Screen
C46	1000		C8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Cathode
C47	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	4th. Video IF Fil.
C48	5		C-8G-12186	SI5NP0			NP0K-050		Video Diode Filter
C49	22				TCZ-22		NP0K-220	5TCC-Q22	Fixed Trimmer
C50	1000		C-8G-13201	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Video Det. Fil.
C51	68	500	C-8F3-111	1469-00007	D6-680	5R5Q7	GP1K-680	MS-47	Video Coupling
C52	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Coupling
C53	.1	400	C-8D-10760	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C54	.1	400	C-8D-10760	P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C55	3.3		A-8G-12495-5	SI3.3NP0	TCZ-3.3		NP0K-3R3		Sound IF Coupling
C56	.004	400	C-8D-17958	P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Sound IF Decoupling
C57	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	5000		A-8G-13962	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C59	5			SI5		5W5V5	GP1K-050		Balancing Cap. †
C60	470	500	C-8F3-121	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Diode Load Cap.
C61	2000			SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	De-emphasis ††
C62	.01	200	C-8D-11738	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C63	.02	200	C-8D-17868	P488-02	DF-203	PTE4S2		2TM-S2	Tone Comp. *
C64	.01	200	C-8D-11738	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C65	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	.005	600	C-8D-10935	P488-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate††
C67	470	500	C-8F3-121	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Sync. Coupling
C68	.1	200	C-8D-10770	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C69	.01	400	C-8D-10761	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sync. Sep. Plate
C70	.005	600	C-8D-10935	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Sync. Coupling
C71	.02	400	C-8D-10774	P488-02	DF-203	PTE4S2		4TM-S2	Integrator Net.
C72	.05	400	C-8D-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Discharge
C73	.35	400	C-8D-13439	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C74	470	500	C-8F3-121	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Horiz. Sync. Coupling
C75	680	500	C-8F3-123	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Voltage Divider
C76	220	500	C-8F3-117	1469-00025	D6-221	5R5T25	GP2K-221	MS-32	Horiz. Feedback
C77	680	500	C-8F3-123	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Voltage Divider
C78	220	500	C-8F3-117	1469-00025	D6-221	5R5T25	GP2K-221	MS-32	Horiz. Feedback
C79	.02	600	C-8D-17268	P688-02	DF-203	PTE6S2		6TM-S2	AFC Filter
C80	.002	600	C-8D-10778	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	AFC Filter
C81	3900	500	C-8F11-132	1464-004	D6-402	1DR5D4	GP2-333-402	MS-24	Fixed Trimmer
C82	220	500	C-8F3-117	1469-00025	D6-221	5R5T25	GP2K-221	MS-32	Horiz. MV Feedback
C83	680	500	C-8F3-123	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Horiz. Discharge
C84	.001	400	C-8D-12020	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C85	22		C-8G-11892		TCN-22		N750K-220	5TCU-Q22	Horiz. Feedback
C86	.1	400	C-8D-17990	P488-1	DF-104	PTE4P1		4TM-P1	Horiz. Output Screen
C87	.1	200	C-8D-10770	P288-1	DF-104	PTE4P1		2TM-P1	Fixed Trimmer ##
C88	.5	200	C-8D-11270	P288-5		GT2P5		2TM-P5	Horiz. Sweep Coupling
C90	1000	500	C-8F6-125	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	RF Bypass

† Some models use 4.7MMF Mfgrs. Part # A-8G-12495-6 in this application.
† Some models use 12MMF Mfgrs. Part # C-8G-17305 in this application.
# Some models use 41MMF Mfgrs. Part # C-8G-11893 in this application.
†† Some models use 470MMF Mfgrs. Part # C-8F3-12 in this application.
†† Some models use .01MF Mfgrs. Part # C-8D-10761 in this application.
Some models use .05MF Mfgrs. Part # C-8D-10770 in this application.
* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10A-18441		RTV-218	SBBT-617-S	Contrast Control - Front
B	1Meg	½					Volume Control and SW - Tapped ④ 100KΩ - Rear
R2A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R2A per instructions
R3A	100KΩ	½	A-10B-17275	Q11-128	AG-49-S	AN-40	Vert. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R3A per instructions
R4A	500Ω	½	A-10B-17766	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	750KΩ	½	A-10B-18240		AG-61-S	AN-69	Vert. Size Control
B	Shaft		Not req.		FKS-1/4	AK-1	Attach to R5A per instructions
R6A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R6A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	470KΩ 5%	½		BTS-470K-5%	Antenna Isolation
R8	680Ω	½	C-9B1-60	BTS-680	Antenna Coil Shunt
R9	10KΩ	½	C-9B1-74	BTS-10K	RF Amp. Grid
R10	68Ω	½	C-9B1-48		RF Amp. Cathode
R11	1000Ω 20%	½	C-9B1-13	BTS-1000	RF Amp. Screen
R12	560Ω	½	C-9B1-71	BTS-5600	RF Coil Shunt
R13	10KΩ	½	C-9B1-74	BTS-10K	Mixer Grid
R14	220Ω	½	C-9B1-54	BTS-220	Conv. Cathode
R15	10KΩ	½	C-9B1-74	BTS-10K	Osc. Grid
R16	5600Ω	½	C-9B1-71	BTS-5600	Osc. Plate
R17	10Ω	½	C-9B1-38		Parasitic Suppressor
R18	10Ω	½	C-9B1-38		Parasitic Suppressor
R19	1000Ω 20%	½	C-9B1-13	BTS-1000	Decoupling
R20	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R21	8200Ω	½	C-9B1-73	BTS-8200	1st. Video IF Amp. Grid
R22	82Ω	½	C-9B1-49	BTS-82	1st. Video IF Amp. Cathode
R23	1000Ω 20%	½	C-9B1-13	BTS-1000	1st. Video IF Amp. Decoupling
R24	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R25	4700Ω	½	C-9B1-70	BTS-4700	2nd. Video IF Amp. Grid
R26	82Ω	½	C-9B1-49	BTS-82	2nd. Video IF Amp. Cathode
R27	1000Ω 20%	½	C-9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling
R28	1000Ω 20%	½	C-9B1-13	BTS-1000	AGC Network
R29	8200Ω	½	C-9B1-73	BTS-8200	3rd. Video IF Amp. Grid
R30	82Ω	½	C-9B1-49	BTS-82	3rd. Video IF Amp. Cathode
R31	1000Ω 20%	½	C-9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling
R32	4700Ω	½	C-9B1-70	BTS-4700	4th. Video IF Transformer Shunt
R33	120Ω	½	C-9B1-51	BTS-120	4th. Video IF Amp. Cathode
R34	68KΩ	1	C-9B2-84	BTA-68K	4th. Video IF Amp. Screen
R35	5600Ω	½	C-9B1-71	BTS-5600	4th. Video IF Amp. Plate Decoupling
R36	18KΩ	½	C-9B1-77	BTS-18K	5th. Video IF Transformer Shunt
R37	8200Ω	½	C-9B1-73	BTS-8200	Video Det. Diode Load
R38	33KΩ	½	C-9B1-80	BTS-33K	AGC Network
R39	68KΩ	½	C-9B1-84	BTS-68K	AGC Network
R40	2200Ω	½	C-9B1-66	BTS-2200	AGC Network
R41	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Voltage Divider
R42	1Meg	½	C-9B1-98	BTS-1Meg	DC Restorer Diode Load
R43	6800Ω 20%	½	C-9B1-72	BTS-6800	Video Amp. Plate
R44	3300Ω	1	C-9B2-88	BTA-3300	Video Amp. Plate
R45	22KΩ 20%	2		BTS-22K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	5600Ω	1	C-9B2-71	BTA-5600	Decoupling
R47	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Video Amp. Grid
R48	100Ω	½	C-9B1-50	BTS-100	Video Amp. Cathode
R49	4700Ω 20%	2	C-9B4-70	BTB-4700	Video Amp. Plate
R50	1000Ω	10	C-9C14-1099	1 3/4A-1000	Voltage Divider - Wire Wound
R51	1200Ω	10	C-9C14-1100	1 3/4A-1200	Voltage Divider - Wire Wound
R52	68KΩ	½	C-9B1-84	BTS-68K	Voltage Divider
R53	22KΩ	½	C-9B1-78	BTS-22K	Picture Tube Grid
R54	100KΩ	½	C-9B1-86	BTS-100K	Picture Tube Cathode
R55	1000Ω	½	C-9B1-62	BTS-1000	Acc. Anode
R56	220KΩ	½	C-9B1-90	BTS-220K	Sound IF Transformer Shunt
R57	120Ω	½	C-9B1-51	BTS-120	Sound IF Amp. Cathode
R58	2200Ω	½	C-9B1-66	BTS-2200	Sound IF Amp. Decoupling
R59	22KΩ 20%	½	C-9B1-78	BTS-22K	Ratio Det. Diode Load
R60	27KΩ 20%	½		BTS-27K	De-emphasis - See Note 2
R61	47KΩ	½	C-9B1-82	BTS-47K	Tone Compensation - See Note 1
R62	10Meg 20%	½	C-9B1-37	BTS-10Meg	AF Amp. Grid
R63	220KΩ	½	C-9B1-90	BTS-220K	AF Amp. Plate
R64	470KΩ 20%	½	C-9B1-94	BTS-470K	Output Grid
R65	680Ω	1	C-9B2-60	BTA-680	Output Cathode
R66	10KΩ	½	C-9B1-74	BTS-10K	Isolation
R67	4.7Meg	½	C-9B1-106	BTS-4.7Meg	Sync. Sep. Grid
R68	68KΩ	2	C-9B4-84	BTB-68K	Sync. Sep. Plate
R69	8200Ω	½	C-9B1-73	BTS-8200	Voltage Divider
R70	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Sync. Amp. Grid
R71	47KΩ 5%	1	C-9B2-82	BTA-47K-5%	Sync. Amp. Plate
R72	56KΩ	½	C-9B1-83	BTS-56K	Integrator
R73	1.5Meg	½	C-9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R74	220KΩ	½	C-9B1-90	BTS-220K	Vert. Osc. Plate
R75	220KΩ	½	C-9B1-90	BTS-220K	Vert. Osc. Plate
R76	3900Ω	½	C-9B1-69	BTS-3900	Vert. Peaking
R77	470KΩ 5%	½	C-9B1-94	BTS-470K-5%	Voltage Divider
R78	47KΩ	½	C-9B1-82	BTS-47K	Voltage Divider
R79	1Meg	½	C-9B1-98	BTS-1Meg	Vert. Amp. Grid
R80	1000Ω	½	C-9B1-62	BTS-1000	Vert. Amp. Cathode
R81	2200Ω	½	C-9B1-66	BTS-2200	Dampling
R82	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Feedback Network - See Note 3
R83	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Det. Diode Load
R84	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Det. Diode Load
R85	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Det. Diode Load
R86	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Det. Diode Load
R87	68KΩ 20%	½	C-9B1-84	BTS-68K	Horiz. AFC Filter
R88	1500Ω	½	C-9B1-64	BTS-1500	Horiz. MV Cathode
R89	5600Ω	1	C-9B2-71	BTA-5600	Horiz. MV Plate
R90	100KΩ	½	C-9B1-86	BTS-100K	Horiz. MV Grid
R91	220KΩ	½	C-9B1-90	BTS-220K	Horiz. MV Plate
R92	220Ω	½	C-9B1-54	BTS-220	Parasitic Suppressor
R93	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Output Grid
R94	6800Ω	1	C-9B2-72	BTA-6800	Horiz. Output Screen
R95	680KΩ 20%	½	C-9B1-96	BTS-680K	Horiz. Feedback Network
R96	2.2Ω	½	C-9C1-1067		HV Rectifier Filament
R97	5600Ω	2	C-9B4-71	BTB-5600	Decoupling
R98	5600Ω	2	C-9B4-71	BTB-5600	Voltage Divider
R99	5600Ω	2	C-9B4-71	BTB-5600	Decoupling
R100	470KΩ 5%	½	C-9B1-94	BTS-470K-5%	Isolation

Note 1 Not used in all models.
Note 2 Some models use 10KΩ resistor in this application.
Note 3 Some models use 220KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ⑤ 1.8A	720VCT ⑤ 3A	5VAC	6.3VAC ⑤ 1.5A SEC. 4 6.3VAC ⑤ 7A	C12A-18839	P-8159	P-3059	TP395 and F633 ①

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	200Ω	1100Ω	B12M-18241	A-8111 ②	A-3000 ②	TB0-1 ②	Vert. Block Osc. Trans.
T3	870Ω Tap 82Ω	4Ω Tap .3Ω SEC. 2 5.3Ω SEC. 3 0Ω	C12M-18689-2		HV0-6 and MWC-1 ③		Horiz. Output Trans.
T4	990Ω	11.5	B12C-17303	A-8112	A-3036	TB0-5 ①	Vert. Output Trans.
T5A	13.5Ω		B13M-13590	DY-1	MD-12		Horiz. Deflection Coils
B	61Ω						Vert. Deflection Coil.

① Drill one new mounting hole.
③ Used for AGC winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	6.9KΩ	3Ω	460Ω	.9Ω	B12C-18743	A-3878	A-2931	R0-13 ①	① Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3Ω	C18A-18745 ④	6J6	6A15	④ Used in model 05TV1-43-8945A.
B	PM	3Ω	C18A-18865 ⑤	10J12	10A4A	⑤ Used in models 05TV1-43-9005A, 9006A.
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	9/16"				
B	9 7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	38Ω	1.3 Henries	B16A-17959	C-2326 ②	C-2991	TR3300 ②	② Drill one new mounting hole.
L2	.250A	38Ω	1.3 Henries	B16A-17959	C-2326 ②	C-2991	TR3300 ②	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
L3	High Band Ant. Trans.	.1Ω	.1Ω	B-201-17143		
L4	Low Band Ant. Trans.	.1Ω	.1Ω			Part of L3
L5	RF Choke	.9Ω		A-16A-17128		
L6	RF Coil Pri.	.1Ω		B-13E-17140		High Band
L7	RF Coil Sec.	.1Ω		B-13E-17140		High Band
L8	RF Coil Pri.	.1Ω		B-13E-12046		Low Band
L9	RF Coil Sec.	.1Ω		B-13E-12046		Low Band
L10	Osc. Coil	.1Ω		B-13E-17140		High Band
L11	Osc. Coil	.1Ω		B-13D-12155		Low Band
L12	Conv. Plate Trap	11Ω		A-16A-18025		
L13	1st. Video IF	.4Ω		A-13M-18026		
L14	Fil. Choke	.3Ω		A-201-15609		
L15	2nd. Video IF	.2Ω		B-201-15612		
L16	3rd. Video IF	.2Ω		B-201-15612		
L17	4th. Video IF	.2Ω		B-201-15612		
L18	RF Choke	2.4Ω		A-201-15608		
L19	5th. Video IF	1.3Ω	1.3Ω	B-13B-18784		
L20	Fil. Choke	1.1Ω		A-16A-17937		
L21	Peaking	2.3Ω		A-16A-17961		
L22	4.5MC Trap	2.5Ω		A-201-18695		Includes C49
L23	Peaking	20Ω		A-16A-18685		
L24	Peaking	15Ω		A-16A-18685		
L25	Peaking	20Ω		A-16A-19486		
L26	1st. Sound IF	1Ω		B-13A-18783		
L27	Ratio Det. Trans.	4.2Ω	.2Ω	B-13M-17273		Tap. .6Ω
L28	Horiz. Osc.	60Ω		A-13D-16943		
L29	Horiz. Size	.2Ω		A-13M-18233		
L30	Horiz. Lin.	3.6Ω	Tap. 1Ω	A-13M-18961		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CORONADO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250	A46B-18362	A55F-18024	312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M2	RF Tuner		
M3	Switch	A-20F-12108	Phono. (off-on)
M4	Focus Magnet	B-55P-18914	
M5	Ion Trap	B-16M-17982	
B2	Trimmer	A-BE-18508	80-480MMF (Horiz. Drive)
	Knob	A-5B-18781-56	Tuner (Model 05TV1-43-9006A)
	Knob	A-5B-18781-76	Tuner (Models 05TV1-43-8945A, 05TV1-43-9005A)
	Knob	B-5B-17761-76	Volume (Models 05TV1-43-8945A, 05TV1-43-9005A)
	Knob	B-5B-17761-56	Volume (Model 05TV1-43-9006A)
	Knob	B-5B-17762-76	Contrast (Models 05TV1-43-8945A, 05TV1-43-9005A)
	Knob	B-5B-17762-56	Contrast (Model 05TV1-43-9006A)
	Knob	B-5B-18382-36	Antenna
	Knob	B-5B-18244-76	3 Used (Models 05TV1-43-8945A, 05TV1-43-9005A)
	Knob	B-5B-18244-56	3Used (Model 05TV1-43-9006A)
	Pointer	A-2G-18788	

GENERAL ELECTRIC
MODELS 605, 606

GENERAL ELECTRIC
MODELS 605, 606

TRADE NAME	General Electric, Model 605, 606
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1R5 Converter, 1T4 IF Amp., 1U5 DET.-AVC-AF, 3V4 Power Output
POWER SUPPLY	105-125 Volts AC-DC or 7.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	.16 Amp. at 117 Volts AC or 50MA at 7.5 Volts DC and 12MA at 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD.	High side to pin 6, (Grid). of 1R5, (V1). Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	Tuning gang fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
3.		Loop	1500KC	Tune for max. output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		General Electric PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1T4	1T4	6AR	
V3	Det. -AF Amp.	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	RCE-051	PRS150/40-40		BRD4415A		TVA-2445	Filter
B	40	150							Filter
C2	200	10	RCE-132						Filament Filter
C3	200	10	RCE-132	PRS12/250		BRH1225A		TVA-1131	Filament Filter
C4	.02	400	UCC-041	P488-02	DF-203	PTE4S2		4TM-S2	AVC Filter
C5	56	500	UCG-022		TCZ-56		NPO-333-560		Osc. Grid Cap.
C6	10000		RCW-3054	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Decoupling
C7A	300			SI300	D6-301		GP2K-301		Diode RF Filter
B	.002			BPD-002	DD-202		801-002		Audio Coupling
C	.004		*RCW-3015	BPD-004	D6-402		GP2-333-402		Audio Coupling
D	220			SI220	D6-221		GP2K-221		AF Amp. Plate
E	.005			BPD-005	DD-502		811-005		AF Amp. Screen
C8	2000		RCW-3018	BPD-002	DD-202	1W5D2	801-002	5HK-D2	Output Plate
C9	.047	600	UCC-042	P688-047	DF-503	PTE6S5		6TM-S47	Line Filter
C10	.05	400	UCC-045	P488-05	DF-503	PTE4S5		4TM-S5	Line Isolation

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	RRC-166	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A Per Instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A Per Instructions

RESISTORS

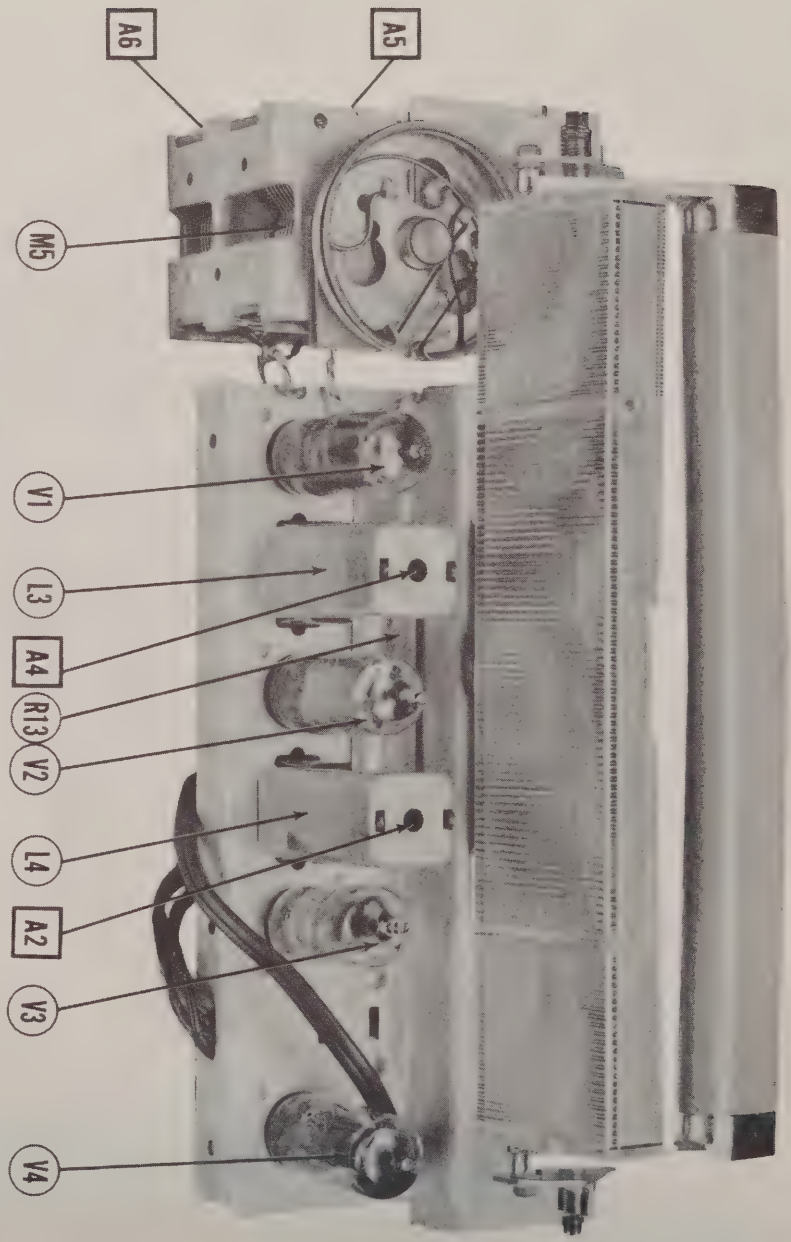
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	General Electric PART No.	IRC PART No.	
R2	100KΩ	½	URD-097	BTS-100K	Osc. Grid
R3	4700Ω	½	URD-065	BTS-4700	Screen Dropping
R4	3.3Meg	½	URD-133	BTS-3.3Meg	AVC Network
R5	3.3Meg	½	URD-133	BTS-3.3Meg	Diode Load
R6	10Meg	½	URD-145	BTS-10Meg	AF Amp. Grid
R7	470KΩ	½	URD-113	BTS-470K	AF Amp. Plate
R8	3.3Meg	½	URD-133	BTS-3.3Meg	AF Amp. Screen
R9	3.3Meg	½	URD-133	BTS-3.3Meg	Output Grid
R10	680Ω	½	URD-045	BTS-680	Filament String
R11	1500Ω	½	URD-053	BTS-1500	Filament String
R12	3900Ω	2		BW-2-3900	Filter-See Note 1
R13	2300Ω	10	RRW-042		Filament Dropping-Wire Wound
R14	33Ω	½	URD-013		Surge Limiter
R15	820KΩ	½		BTS-820K	Isolation-See Note 2

Note 1- Some models use 3300Ω Resistor in this application.
Note 2- Some models use 470KΩ Resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	9KΩ	3.6Ω	500Ω	.4Ω	RTO-108	A-3329	A-2998		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: General Electric PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD RES.	V. C. IMP.				
SP1	PM	3.6Ω	S400-D	ST113 Mod. P4-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: General Elec. PART No.	MEISSNER PART No.	
L1	Loop Ant.	.2Ω		RLL-046		
L2	Osc. Coil	2.8Ω	8.4Ω	RLC-101		
L3	1st. IF	21Ω	22Ω	RTL-052		
L4	2nd. IF	21Ω	22Ω	RTL-052		

SELENIUM RECTIFIER

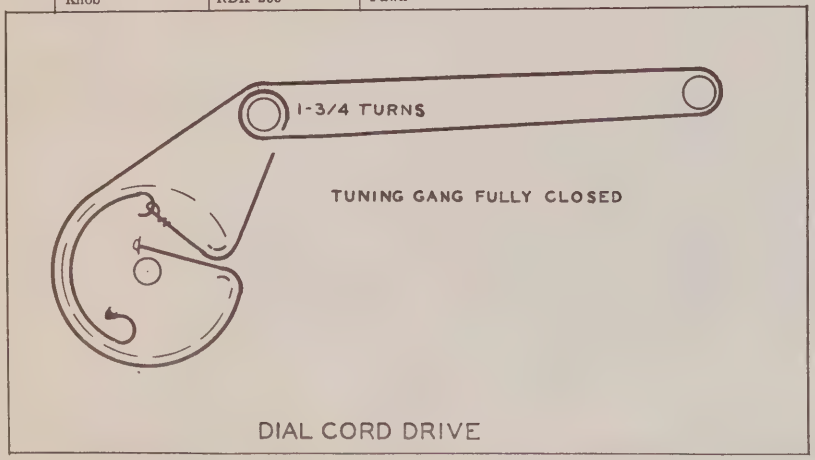
ITEM No.	RATING CURRENT	REPLACEMENT DATA: General Electric PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	.070A	REX-005	NB-5	5M4	

BATTERIES

ITEM No.	VOLTAGE	General Electric PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	7.5V "A"		717			G5			
M3	67.5V "B"			467			XX45		

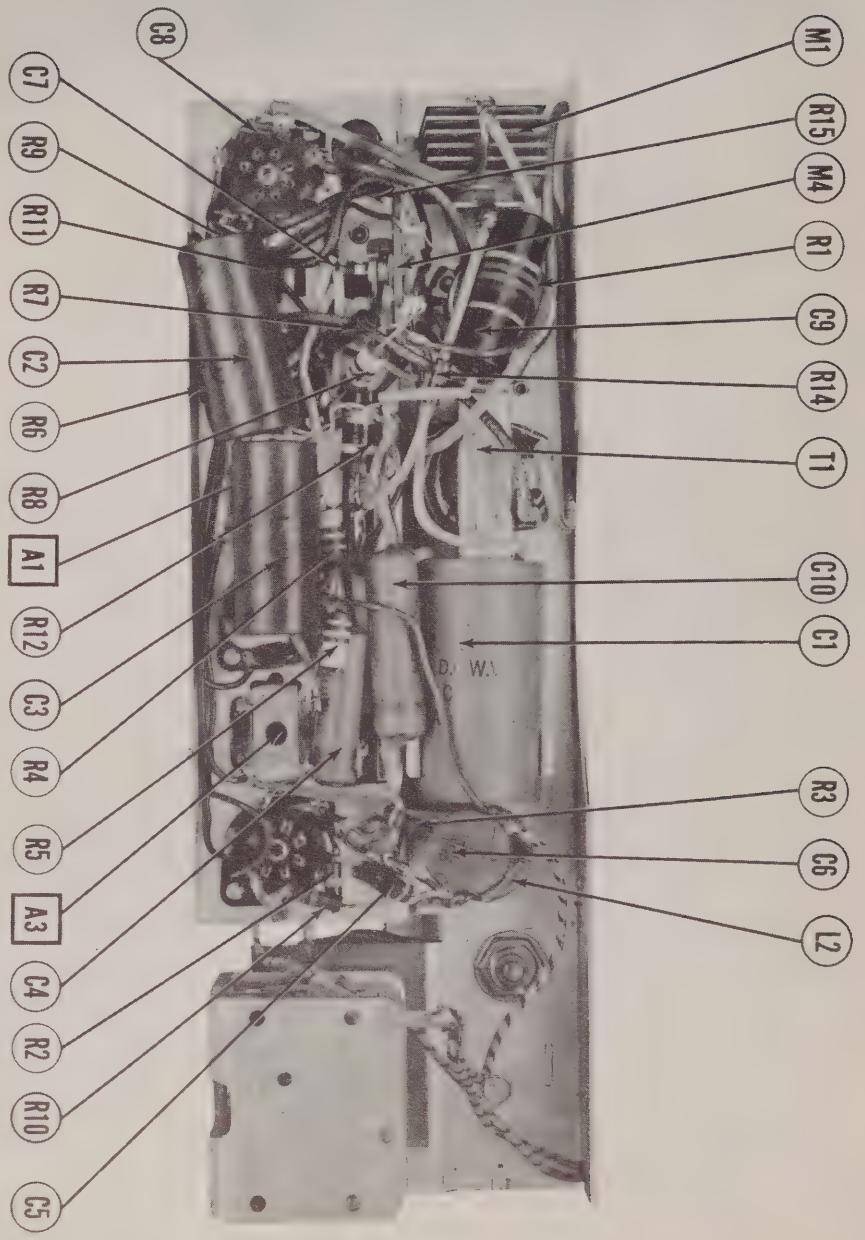
MISCELLANEOUS

ITEM No.	PART NAME	GENERAL ELEC. PART No.	NOTES
M4	Switch	RSW-088	AC/DC-Battery
M5	2 Gang Var. Cap.	RCT-053	(43-467MMF, 26-162MMF)
	Dial Pointer	RDP-061	
	Dial Scale	RDS-107	
	Cabinet	RAC-095	Maroon
	Cabinet	RAC-096	Green
	Knob	RDK-252	Green
	Knob	RDK-253	Fawn

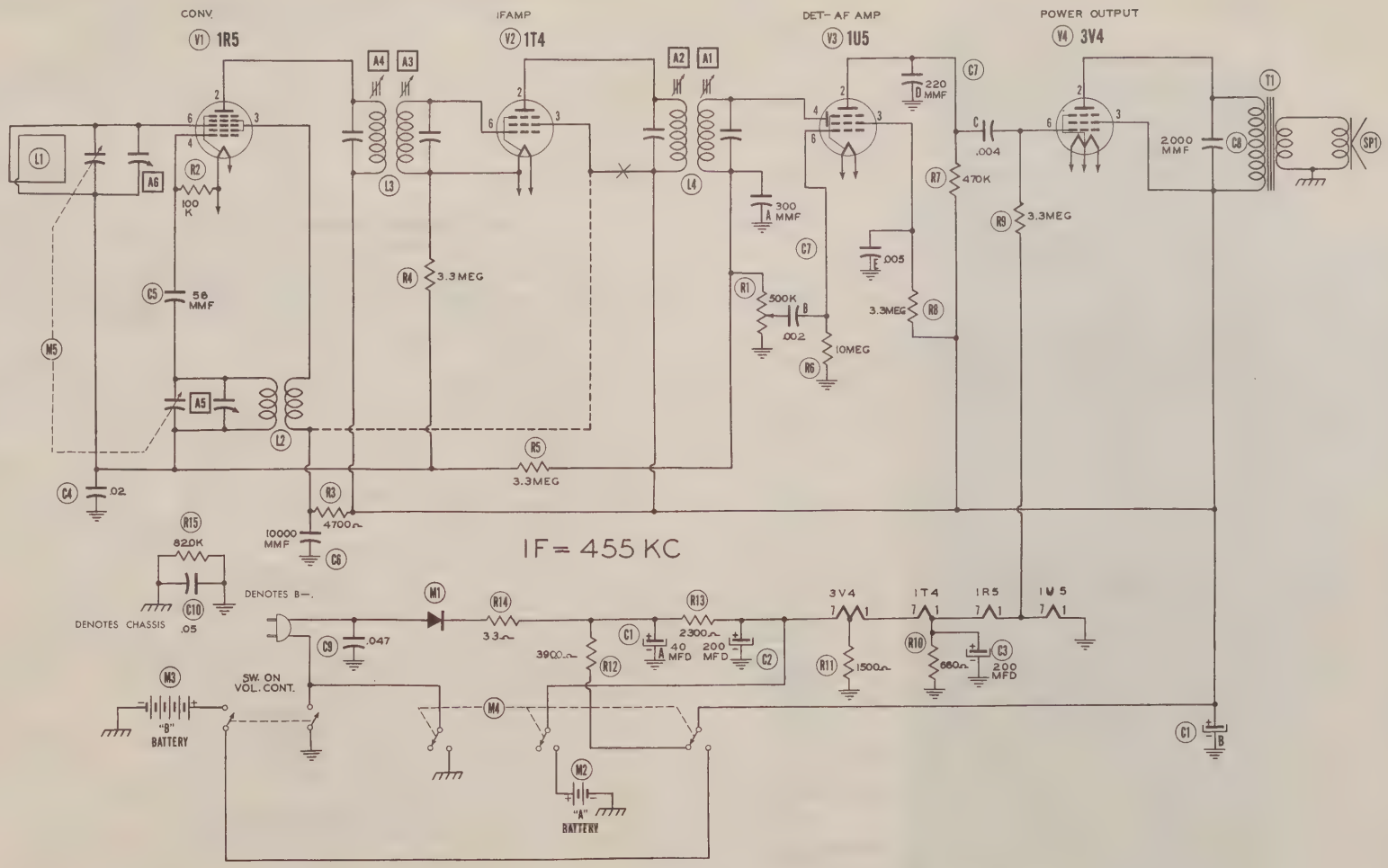


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 605



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	3.2VAC	70VDC	56VDC	■8-27VDC	3.2VAC	.2VDC	6.8VAC
V 2	1T4	6.8VAC	70VDC	70VDC	.2VDC	6.8VAC	3.3VDC	10.5VAC
V 3	1U5	0V	26VDC	25VDC	-.3VDC	0V	0V	3.2VAC
V 4	3V4	10.5VAC	70VDC	75VDC	0V	13VAC	.1VDC	16VAC

§ TAKEN WITH VACUUM TUBE VOLTMETER.
■ OSCILLATOR READING UNSTABLE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†3.9KΩ	†8.6KΩ	100KΩ	*	1.7Meg	*
V 2	1T4	*	†3.9KΩ	†3.9KΩ	1.7Meg	*	430Ω	*
V 3	1U5	*	†470KΩ	†3.9Meg	500KΩ	*	10Meg	*
V 4	3V4	*	†4.4KΩ	†3.9KΩ	Inf.	*	3.3Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.

ALL MEASUREMENTS TAKEN IN AC POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

NATIONAL MODELS TV-1701, TV-1702, TV-1725, TV-1727, TV-1729, TV-1730, TV-1731, TV-1732, TV-2029, TV-2030

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MODEL TV-1701

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DATE 9-51 SET 145 FOLDER 7

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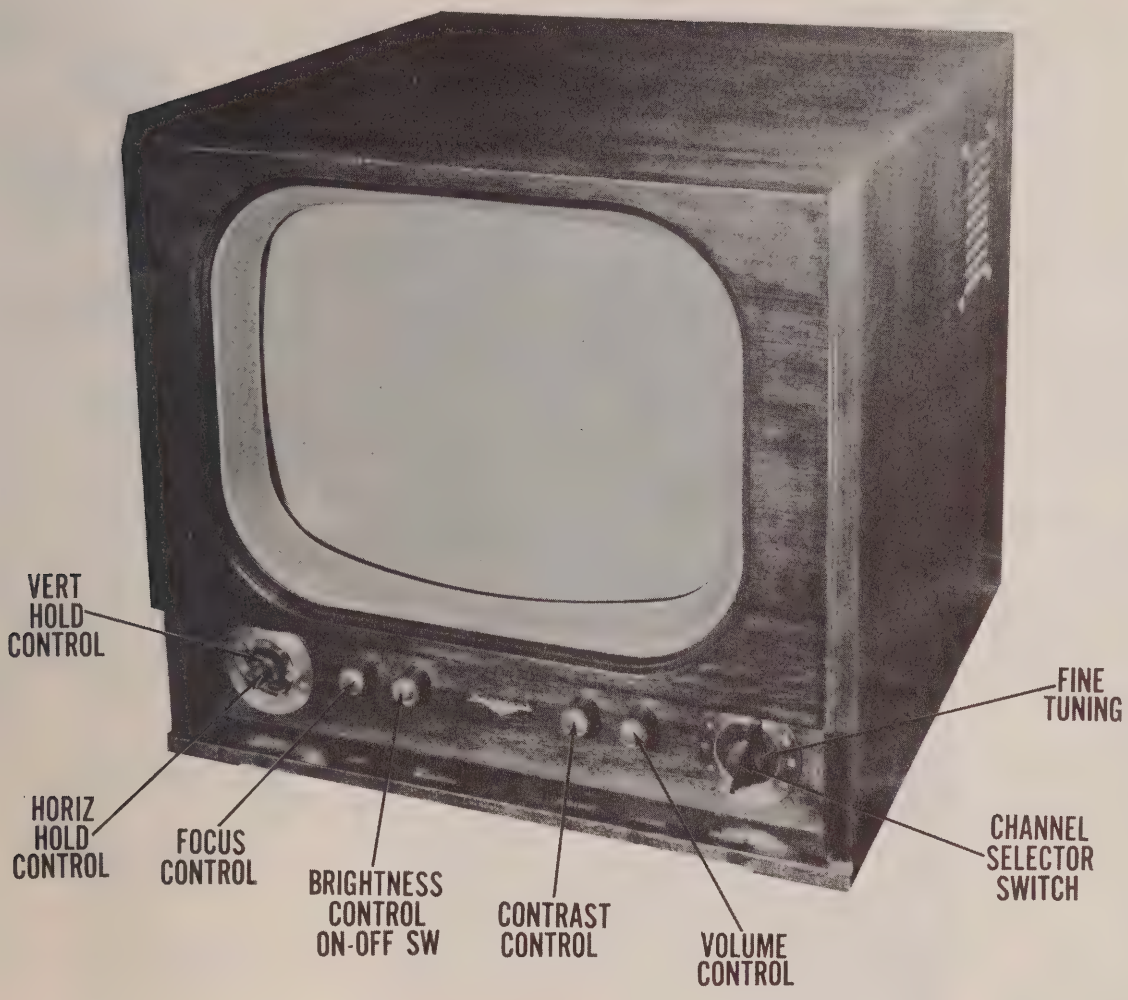

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NATIONAL MODEL TV-1701

TRADE NAME	National, Models TV-1701, -1702, -1725, -1727, -1729, -1730, -1731, -1732, -2029, -2030
MANUFACTURER	National Co., Inc., 61 Sherman St., Malden (48), Mass.
TYPE SET	Television Receiver
TUBES	Twenty four
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.85 Amp. at 117 Volts AC
TUNING RANGE—CHANNELS	2 thru 13

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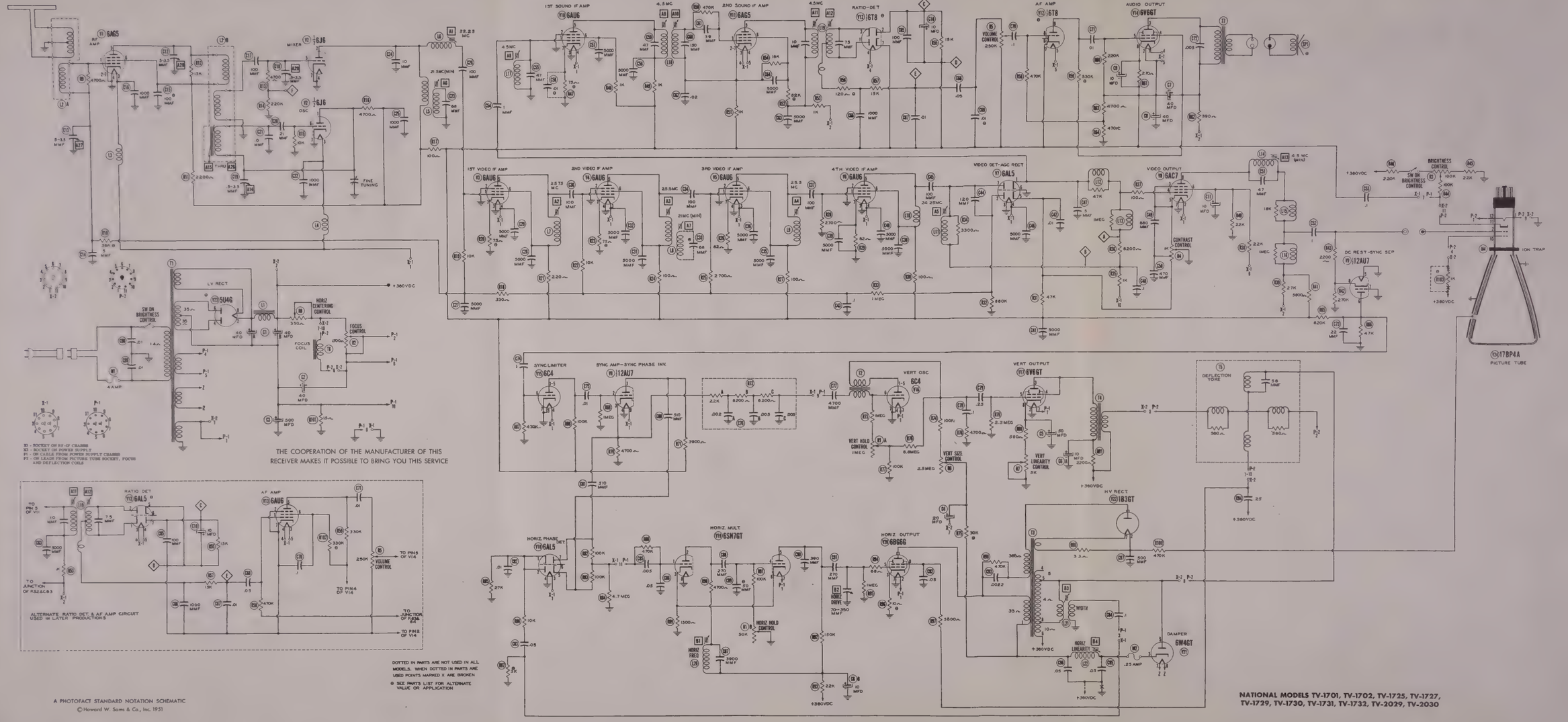
NATIONAL MODELS TV-1701, TV-1702, TV-1725, TV-1727,
TV-1729, TV-1730, TV-1731, TV-1732, TV-2029, TV-2030
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
ALTERNATE RATIO DET. & AF AMP CIRCUIT
USED IN LATER PRODUCTIONS
DOTTED IN PARTS ARE NOT USED IN ALL
MODELS. WHEN DOTTED IN PARTS ARE
USED POINTS MARKED X ARE BROKEN
⊘ SEE PARTS LIST FOR ALTERNATE
VALUE OR APPLICATION
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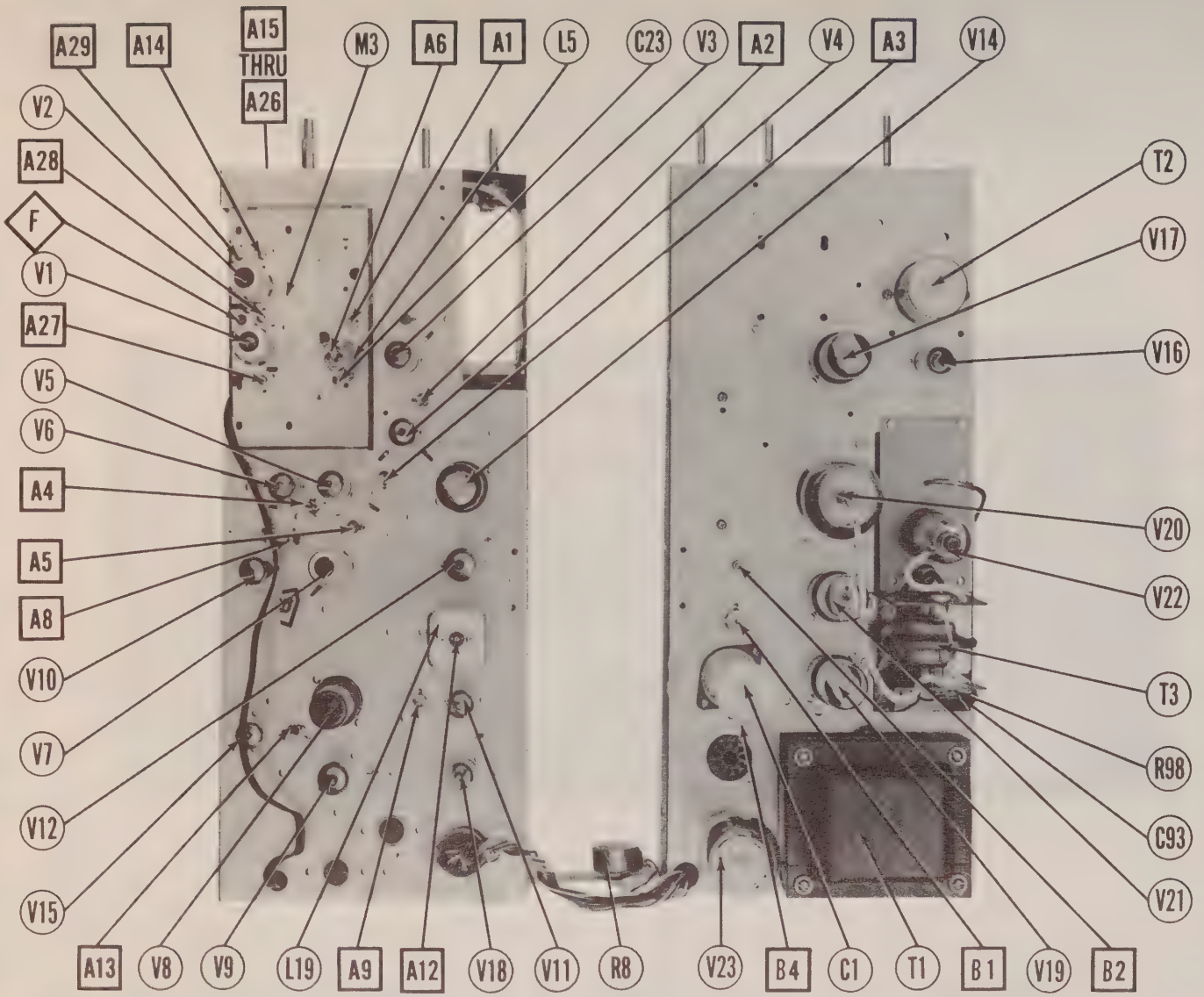

CHASSIS TOP VIEW

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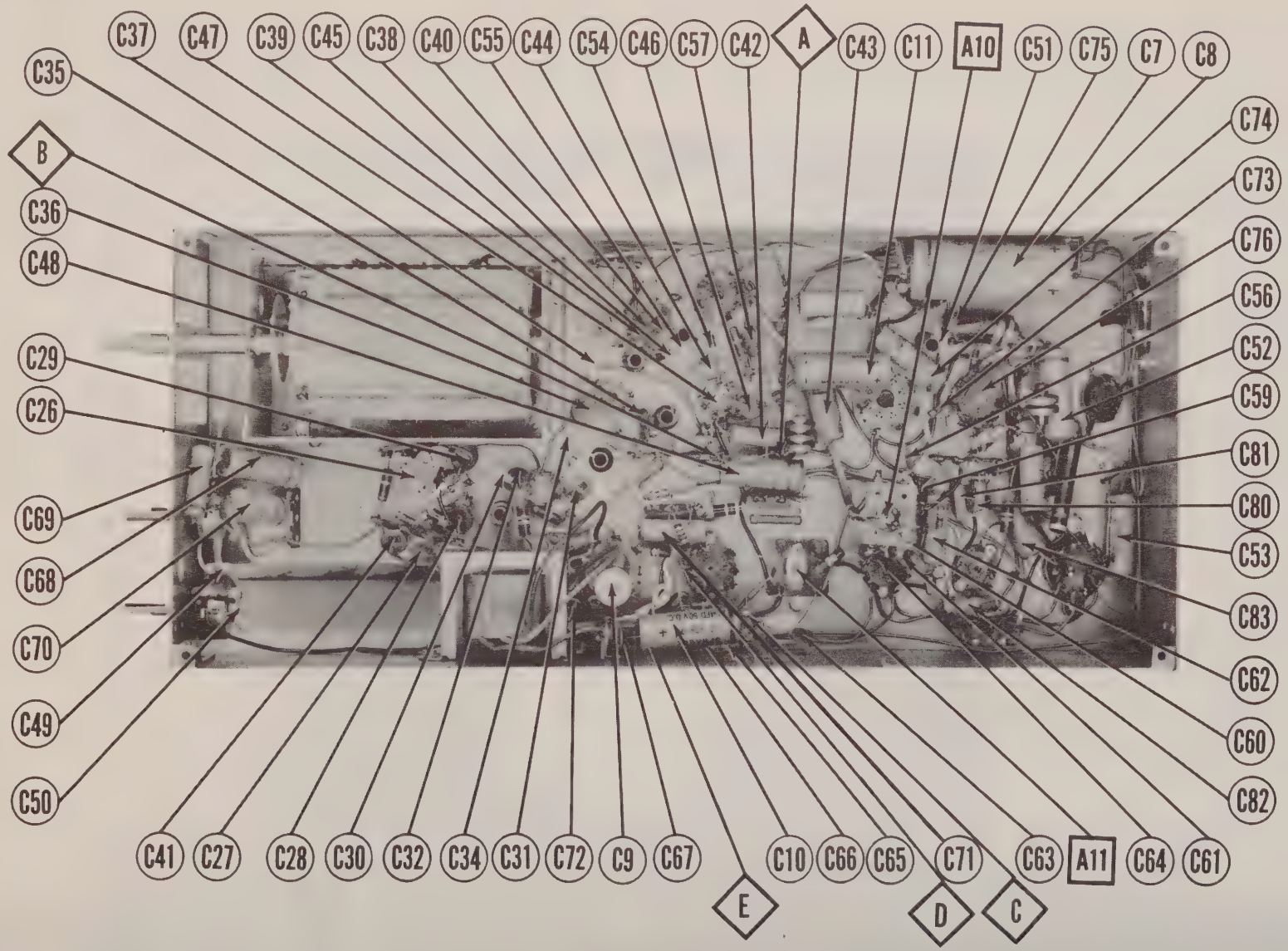
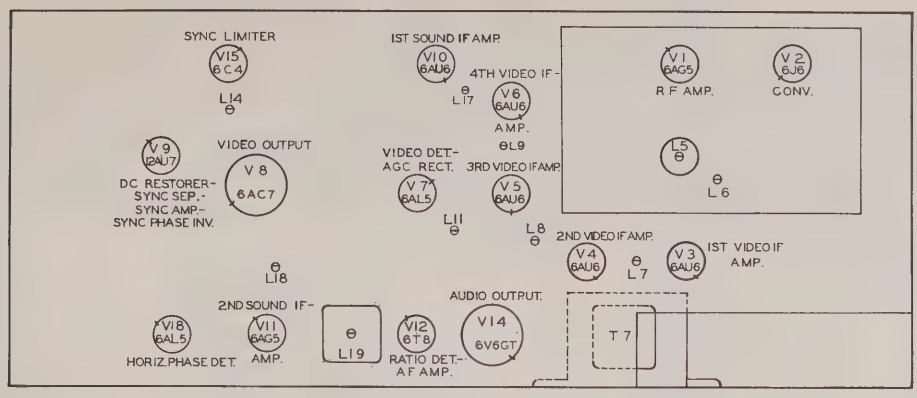
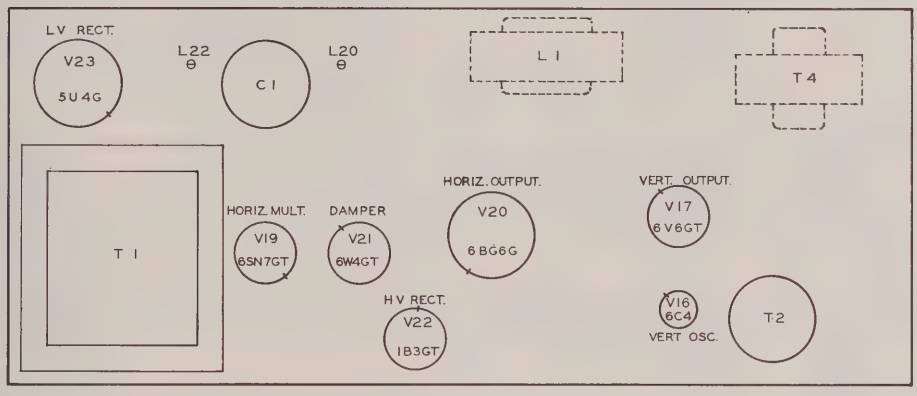
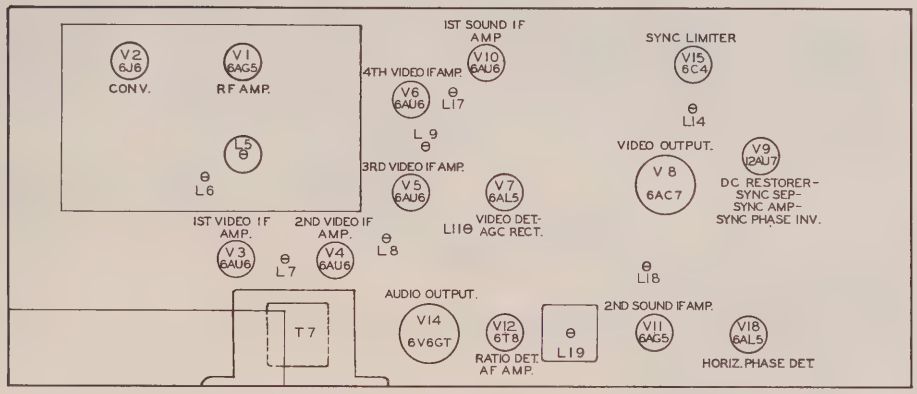


RF-IF CHASSIS-CAPACITOR AND ALIGNMENT IDENTIFICATION

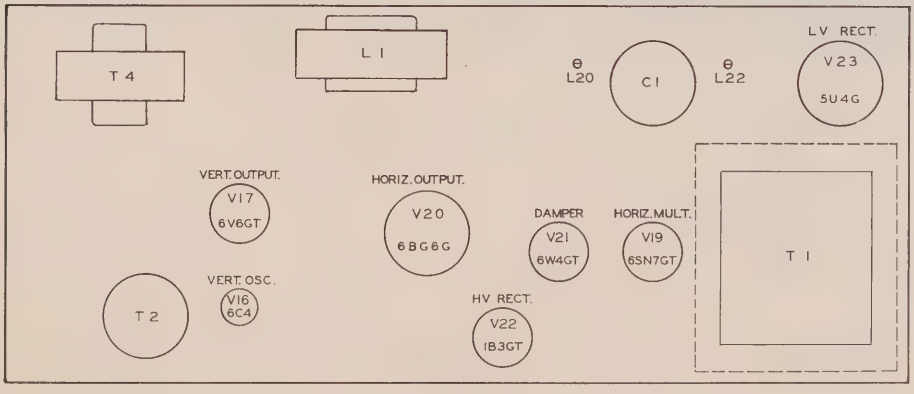


TOP VIEW





BOTTOM VIEW



TUBE PLACEMENT CHART

NATIONAL MODELS TV-1701, TV-1702, TV-1725, TV-1727, TV-1729, TV-1730, TV-1731, TV-1732, TV-2029, TV-2030

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 2 volt supply, from a battery, to the ungrounded lead of C43. Connect the positive lead to chassis.
During video IF alignment the common lead of the VTVM is connected to approximately 3 volts with respect to chassis. Avoid grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	22.25MC (unmod.)	Any	DC probe to Point (A). Common to Point (B).	A1	Adjust for maximum deflection.
2.	"	"	25.75MC	"	"	A2	"
3.	"	"	22.5MC	"	"	A3	"
4.	"	"	25.5MC	"	"	A4	"
5.	"	"	24.25MC	"	"	A5	"
6.	"	"	21.5MC	"	"	A6	Adjust for MINIMUM deflection. Repeat step 1.
7.	"	"	21MC	"	"	A7	Adjust for MINIMUM deflection. This trap does not appear in all chassis.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Leave the bias connected.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.5MC 26.MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If the set has trap A7, it is used to flatten the region below 21.5MC. If necessary retouch A1 thru A6 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 90 volts with respect to chassis. Avoid grounding or touching the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (C). Common to Point (D).	A8, A9, A10, A11	Adjust for maximum deflection. Increase signal gen. output until VTVM reads exactly 5 volts.
10.	"	"	"	"	DC probe to Point (E). Common to Point (C).	A12	Adjust A12 until VTVM reads exactly 2.5 volts.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD.	High side to pin 1, (cathode), of 6AL5, (V7) Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A8, A9, A10, A11	Disconnect stabilizer capacitor C10. Adjust for maximum amplitude and symmetry as per fig. 2.
10.	"	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A12	Reconnect capacitor C10. Adjust A12 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

Remove the picture tube grid lead from its socket.
Remove the sound IF amp. tube, (V10) from its socket.
Connect a .001MFD. capacitor between the picture tube grid socket, and pin 5 of V10 socket.
During 4.5MC trap adjustment,the common lead of the VTVM is connected to approximately 90 volts with respect to chassis. Avoid grounding or touching the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (C). Common to Point (D).	A13	Adjust for MINIMUM deflection.

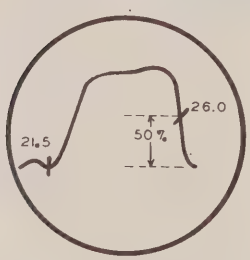


FIG. 1

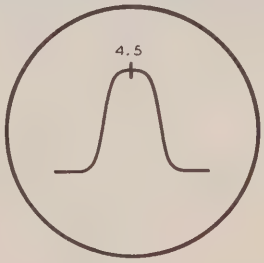


FIG. 2

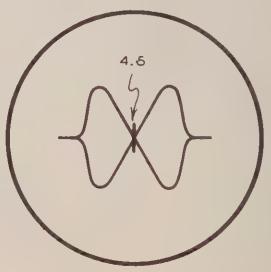


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A14. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A14 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of thechannel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistors	Across antenna terminal with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A15	Adjust to place sound marker in "notch" as per fig. 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A16	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A17	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A18	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A19	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A20	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A21	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A22	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A23	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A24	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A25	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A26	

RF AND MIXER ALIGNMENT

Connect the negative lead of a 1.5 volt battery to the junction of C27 and R19. Connect the positive lead to chassis.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminal with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point (F). Low side to chassis.	A27, A28 A29	Adjust for response curve similar to fig. 5 with markers above 90%.
14.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response curve similar to fig. 5. If markers fall below 70% on any channel, make compromise adjustment of A27, A28, and A29 with channel selector set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

INTERCARRIER BUZZ REDUCTION

If intercarrier buzz is objectional in chassis employing a 6T8, (ratio detector, first audio amp.), replace R5, balancing resistor, with a low value variable resistor, (200Ω will be satisfactory).
Set the resistor to approximately 50Ω and align the sound IF section with a VTVM as described above. It may be necessary to repeat the alignment of A11 and A12 several times to obtain a correct balance.
Turn the channel switch to channel 2 and retouch A12 for a null in the background noise. This point on the adjustment should agree with the point of $\frac{1}{2}$ voltage. If it does not, change the variable resistor to another value and repeat the entire procedure.
It might be advisable to change the screen dropping resistor of the second sound IF amp. to a larger value, or to reduce the screen bleeder resistor to a lower value, to prevent regeneration.

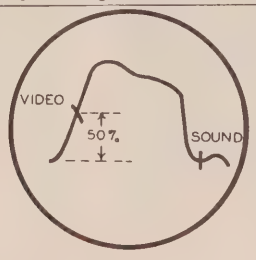


FIG. 4

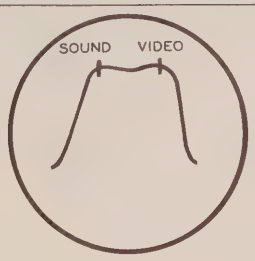


FIG. 5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-1.6VDC	0V	5.9VAC	0V	75VDC	75VDC	0V		
V 2	6J6	65VDC	100VDC	5.9VAC	0V	1.3VDC	§-3.2VDC	0V		
V 3	6AU6	-.2VDC	0V	0V	6.3VAC	95VDC	95VDC	.5VDC		
V 4	6AU6	-.1VDC	0V	6.3VAC	0V	95VDC	95VDC	.5VDC		
V 5	6AU6	-.3VDC	0V	6.3VAC	0V	95VDC	95VDC	.6VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	95VDC	95VDC	.8VDC		
V 7	6AL5	-2.5VDC	-.7VDC	0V	6.3VAC	0V	0V	-3.2VDC		
V 8	6AC7	0V	6.3VAC	1.3VDC	-2.5VDC	1.3VDC	175VDC	0V	135VDC	
V 9	12AU7	90VDC	0V	4.7VDC	0V	0V	4.5VDC	0V	1.1VDC	6.3VAC
V 10	6AU6	0V	0V	0V	6.3VAC	95VDC	95VDC	.6VDC		
V 11	6AG5	¶.3VDC	¶4.7VDC	¶6.3VAC	¶0V	¶255VDC	¶90VAC	¶4.7VDC		
V 12	6T8	¶-.2VDC	¶-.4VDC	¶-.2VDC	¶6.3VAC	¶0V	0V	¶0V	¶-.7VDC	¶80VDC
V 13	6AU6	NOT USED IN ALL MODELS								
V 14	6V6GT	0V	¶0V	¶230VDC	¶245VDC	¶0V	0V	¶6.3VAC	¶13VDC	
V 15	6C4	16VDC	0V	0V	6.3VAC	16VDC	-.3VDC	0V		
V 16	6C4	430VDC	0V	6.3VAC	0V	430VDC	§-34VDC §-180VDC	0V		
V 17	6V6GT	0V	0V	330VDC	330VDC	.3VDC	0V 42VDC	6.3VAC	12VDC 47VDC	
V 18	6AL5	0V	0V	6.3VAC	0V	.8VDC	0V	-1.4VDC		
V 19	6SN7GT	§-.1VDC	225VDC	8.4VDC	§-6.7VDC	100VDC	8.4VDC	6.3VAC	0V	
V 20	6BG6G	0V	6.3VAC	1.1VDC	310VDC	-14VDC	0V	0V	310VDC	Top Cap *
V 21	6W4GT	0V	245VDC	560VDC	0V	370VDC	0V	▲6.3VAC	▲6.3VAC	
V 22	1B3GT	* DO NOT MEASURE								Top Cap ■
V 23	5U4G	0V	380VDC	130VDC	330VAC	0V	330VAC	0V	380VDC	
V 24	17BP4A	0V	1VDC	PIN 10 355VDC	PIN 11 130VDC	PIN 12 6.3VAC	H. V. CONNECTOR ** 13K.V.			

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
¶ MEASURED FROM JUNCTION OF R61, C7 AND C8
▲ MEASURED ACROSS FILAMENTS
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

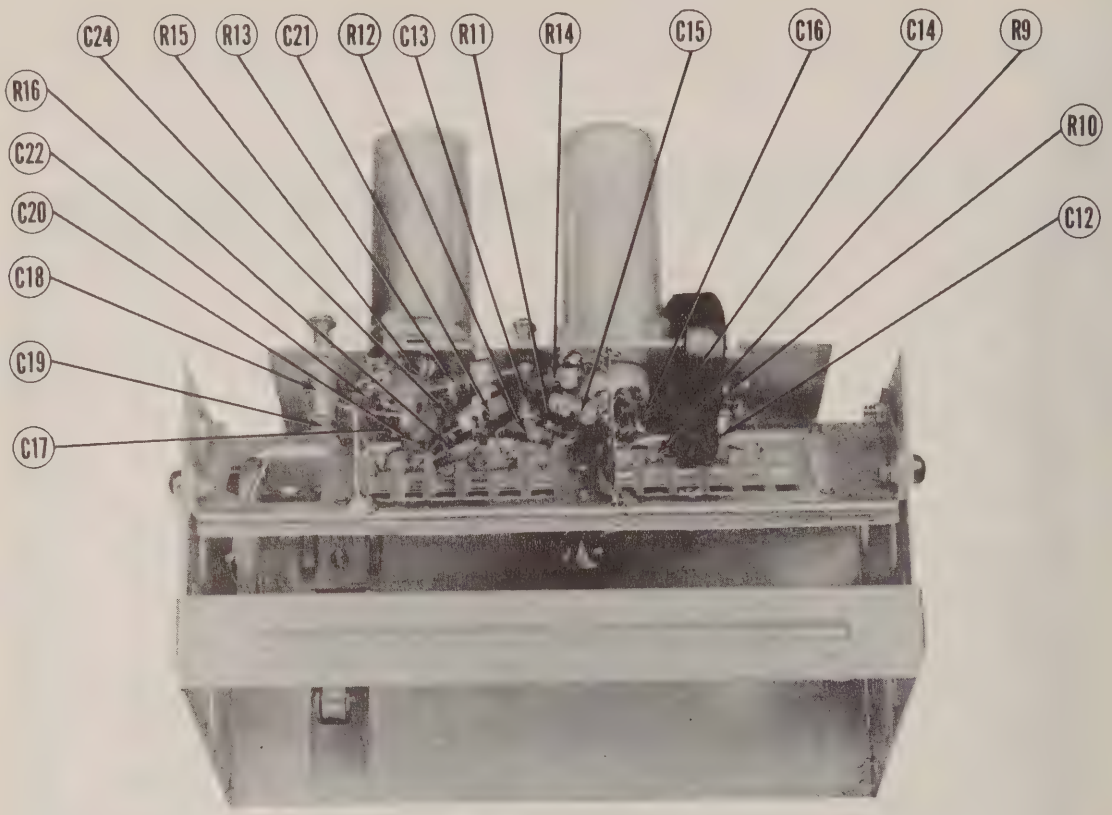
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.7Meg	0Ω	.8Ω	0Ω	¶2300Ω	¶2300Ω	0Ω		
V 2	6J6	¶4800Ω	¶100Ω	.8Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	1.7Meg	0Ω	0Ω	.1Ω	¶220 Ω	¶220 Ω	75Ω		
V 4	6AU6	1.7Meg	0Ω	.1Ω	0Ω	¶100Ω	¶100Ω	75Ω		
V 5	6AU6	1.7Meg	0Ω	.1Ω	0Ω	¶100Ω	¶100Ω	82Ω		
V 6	6AU6	2.7KΩ	0Ω	0Ω	.1Ω	¶100Ω	¶100Ω	82Ω		
V 7	6AL5	9.2KΩ	680KΩ	0Ω	.1Ω	0Ω	0Ω	1KΩ		
V 8	6AC7	0Ω	.1Ω	1KΩ	9.3KΩ	1KΩ	†14KΩ	0Ω	†14KΩ	
V 9	12AU7	¶3900Ω	1Meg	4.7KΩ	0Ω	0Ω	†80KΩ	0Ω	270KΩ	.1Ω
V 10	6AU6	1.6Ω	0Ω	0Ω	.1Ω	¶1KΩ	¶1KΩ	75Ω		
V 11	6AG5	¶470KΩ	¶1KΩ	¶.2Ω	¶0Ω	†1KΩ	†25KΩ	¶1KΩ		
V 12	6T8	Inf.	¶15KΩ	Inf.	¶.2Ω	¶0Ω	Inf.	¶0Ω	¶470KΩ	†330KΩ
V 13	6AU6	NOT USED IN ALL MODELS								
V 14	6V6GT	Inf.	¶0Ω	†850Ω	†470Ω	¶220KΩ	Inf.	¶.2Ω	¶270Ω	
V 15	6C4	¶100KΩ	Inf.	0Ω	.1Ω	¶100KΩ	470KΩ	0Ω		
V 16	6C4	#2.6Meg #130KΩ	0Ω	.1Ω	0Ω	#2.6Meg #130KΩ	2.1Meg	0Ω		
V 17	6V6GT	Inf.	0Ω	†35KΩ	†35KΩ	2.2Meg	5KΩ 0Ω	.1Ω	5.5KΩ 560Ω	
V 18	6AL5	27KΩ	27KΩ	.1Ω	0Ω	4.8Meg	Inf.	4.8Meg		
V 19	6SN7GT	5.1Meg	†27KΩ	1.5KΩ	150KΩ	†170KΩ	1.5KΩ	.1Ω	0Ω	
V 20	6BG6G	Inf.	.1Ω	10Ω	†5.6KΩ	1Meg	Inf.	0Ω	†5.6KΩ	Top Cap #50Ω
V 21	6W4GT	Inf.	†22KΩ	110KΩ	Inf.	†70Ω	Inf.	▲.1Ω	▲.1Ω	
V 22	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #470KΩ
V 23	5U4G	Inf.	14KΩ	122KΩ	48Ω	Inf.	48Ω	Inf.	14KΩ	
V 24	17BP4A	0Ω	270KΩ	PIN 10 †1KΩ	PIN 11 220KΩ	PIN 12 .1Ω				

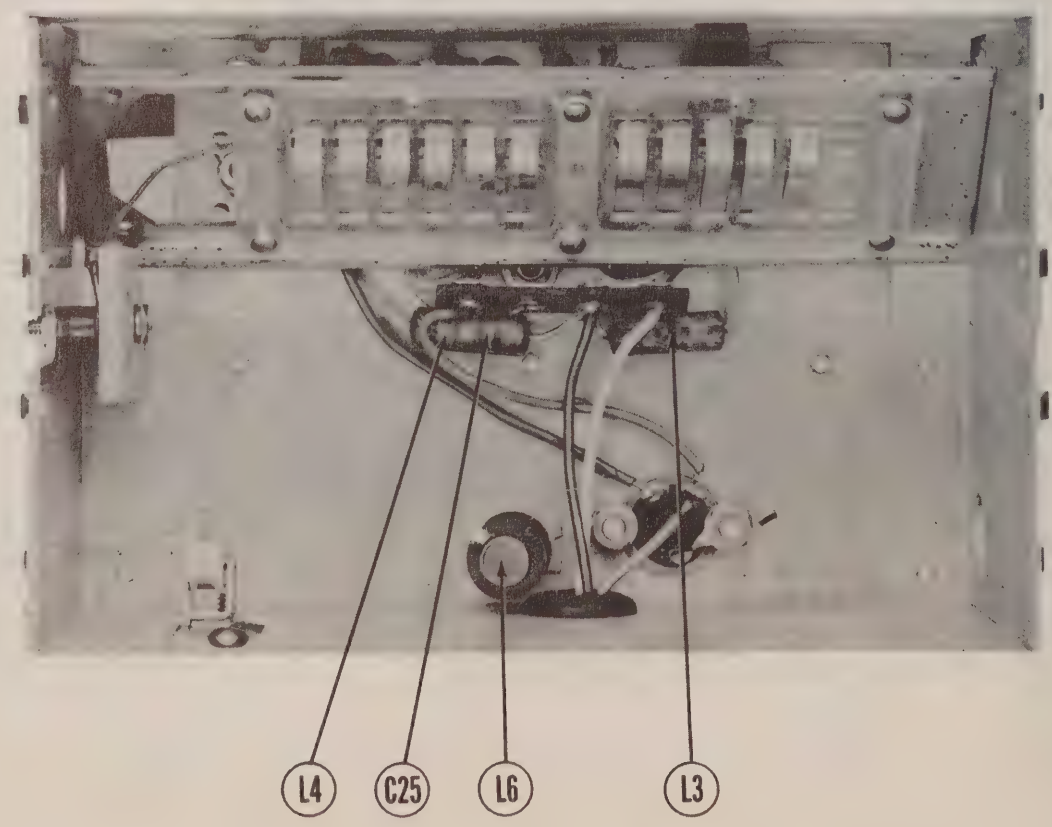
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 2 OF V23
# MEASURED FROM PIN 3 OF V21
¶ MEASURED FROM JUNCTION OF R61, C7, AND C8
▲ MEASURED ACROSS FILAMENTS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

RF-IF CHASSIS-RESISTOR AND INDUCTOR IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

POWER SUPPLY CHASSIS–CAPACITOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Output	6AC7	6AC7	8N	
V9	DC Restorer-Sync. Separator-Sync. Amplifier-Sync. Phase Inverter	12AU7	12AU7	9A	
V10	1st. Sound IF Amp.	6AU6	6AU6	7Bk	
V11	2nd. Sound IF Amp.	6AG5	6AG5	7BD	
V12A	Ratio Detector-AF Amplifier	6T8	6T8	9A	Used in early production, later converted to use V12B and V13.
B	Ratio Detector	6AL5	6AL5	6BT	Not used in all models.
V13	AF Amplifier	6AU6	6AU6	7BK	Not used in all models.
V14	Audio Output	6V6GT	6V6GT	7AC	
V15	Sync. Limiter	6C4	6C4	6BG	
V16	Vert. Oscillator	6C4	6C4	6BG	
V17	Vertical Output	6V6GT	6V6GT	7AC	
V18	Horiz. Phase Det.	6AL5	6AL5	6BT	
V19	Horizontal Mult.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BG6G	6BG6G	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: NATIONAL PART No.	SYLVANIA PART No.	THOMAS PART No.	RMA BASE TYPE	NOTES
V23A	17BP4A ⑤	17BP4A	17BP4		⑤ Used in Models TV-1701, 2, TV-1725, TV-1727, TV-1729, TV-1730, 1, 2 ② Used in Models TV2029, 2030
B	21AP4A ⑥				

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	K945-3	AFH2-72		UP4450		TVL-2830	▲ Filter
B	40	475							▲ Filter
C2	40	450	E338-17	PRS450/40		BR4045A		TVA-1712	Filter
C3	500	13	E338-6	PRS12/500		BRR125A		TVA-1132	Bias Filter
C4	20	450	E338-16	PRS450/20		BR2045A		TVA-1709	Vert. Osc. Decoupling
C5	50	50	E338-21	PRS50/50		BR505		TVA-1308	Vert. Output Decoupling
C6A	10	450	L189-1	PRS450/10-10		BRD1145A		TVA-2722	Vert. Output Decoupling
B	10	450							Horiz. MV Decoupling
C7	40	450	E338-17	PRS450/40		BR4045A		TVA-1712	Audio Output Decoupling
C8	40	450	E338-17	PRS450/40		BR4045A		TVA-1712	Filter
C9	10	50	E338-9	PRS50/10		BR105		TVA-1304	Audio Output Cathode
C10	10	50	E338-9	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C11	10	200	E338-19	PRS250/12		BR1225A		TVA-1504	Video Amp. Screen
C12	.5-3.5				829-3				Variable Trimmer
C13	.5-3.5				829-3				Variable Trimmer
C14	5		D825D-401	SI5NP0	TCZ-4.7		NP0K-050		AGC Filter
C15	100		D825D-421	SI100	D6-101		GP1K-101	5GA-T1	RF amp. Decoupling †
C16	1000		Q525-3	SIU000	D6-102		GP2L-102	5HK-D1	RF Amp. Filament
C17	100		D825D-421	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C18	.5-3.5				829-3				Variable Trimmer
C19	.5-3.5				829-3				Variable Trimmer
C20	21		Q525-4				NP0K-210		Osc. Grid Cap.
C21	10		Q525-3	SIU0N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C22	1000		Q525-3	SI1000	D6-102		GP2L-102	5HK-D1	Osc. Filament
C23	68						N330-338-680		Fixed Trimmer
C24	10			SII0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C25	1000		Q525-3	SIU000	D6-102		GP2L-102	5HK-D1	RF Bypass
C26	100		D825D-421	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C27	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C28	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Decoupling
C29	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Filament
C30	100		D825D-421	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C31	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Decoupling
C32	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Filament
C33	68			SI68	D6-680	5W5Q7	GP1K-680	5GA-Q68	Fixed Trimmer *
C34	100		D825D-421	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C35	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Decoupling
C36	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Filament
C37	100		D825D-421	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C38	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Decoupling
C39	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Cathode
C40	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Filament
C41	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C42	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Bypass
C43	.1	400	D827-12	P488-1	DF-104	PTE4P1		4TM-P1	AGC Filter
C44	120	100		1469-00015	D6-121	5R5T15	GP2K-121		IF Coupling
C45	100		D825D-421	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C46	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Filament
C47	5		D8250-401	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C48	.1	400	D827-12	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C49	680	100	J665-83	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Video Amp. Cathode
C50	470	100	J665-58	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Contrast Control Shunt
C51	47		D826D-428	SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Fixed Trimmer
C52	.1	400	D827-12	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C53	.1	400	D827-12	P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C54	1		L081-4		TCZ-1		NP0K-010		Sound IF Coupling
C55	47				TCZ-47		NP0L-470		Fixed Trimmer
C56	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Plate
C57	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Screen

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	.01	200		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	1st. Sound IF Cathode *
C59	47		D825D-428	SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Fixed Trimmer
C60	150			SI150	D6-151	5W5T15	GP2K-151	5GA-T15	Fixed Trimmer
C61	39	300	J665-17	1468-00004	D6-390	5W5Q4	GP1K-390	1FM-44	Sound IF Coupling
C62	.02	600	D827-43	P688-02	DF-203	PTE6S2		6TM-S2	RF Bypass
C63	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Plate
C64	5000		K946-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Screen
C65	100		D825D-421	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	RF Bypass
C66	1000	500	J665-71	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Diode Load Cap.
C67	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	De-emphasis
C68	.05	600	D-827-3	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C69	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp. *
C70	.1	400	D827-12	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C71	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C72	.005	600	D827-27	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C73	22		K940-3						Sync. Sep. Plate
C74	.1	400	D827-12	P488-1	DF-104	PTE4P1			Sync. Coupling
C75	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C76A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		♦ Q518-1	P688-005	♦ PC-100	PTE6D5	GP2-333-502	♦ 101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C77	4700	500	J666-40	1464-005	D6-472	1DR5D5	GP2-333-472	MS-25	Vert. Sync. Coupling
C78	.1	400	D827-12	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Discharge
C79	.25	400	D-827-17	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C80	510	500	J665-57	1469-0005		5R5T5		MS-35	Horiz. Sync. Coupling
C81	510	500	J665-57	1469-0005		5R5T5		MS-35	Horiz. Sync. Coupling
C82	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AFC Filter
C83	.05	600	D827-3	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C84	.1	600	D827-13	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Feedback
C85	.005	600	D827-27	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. Sync. Coupling
C86	.05	600	D827-3	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. MV Grid
C87	3900	500	J819-3	1464-004		1DR5D4			Fixed Trimmer
C88	270	500	H500-6	1469-0003		5R5T3		MS-33	Horiz. MV Feedback
C89	50			SI47N750	TCN-47		N750K-470	5TCU-Q47	Horiz. MV Grid †
C90	390	500	J665-53	1469-0004		5R5T4		MS-34	Horiz. Discharge
C91	270	500	H500-6	1469-0003		5R5T3		MS-33	Horiz. Sweep Coupling
C92	.05	600	D827-3	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C93	.0022	1000		P1088-0022		PTE16D2		MB-D22	Horiz. Sweep Coupling
C94	.25	600	D827-19	684-25		GP6P25		6TM-P25	Horiz. Sweep Coupling
C95	.05	600	D827-27	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Damper Filter
C96	.05	600	D-827-3	P688-05	DF-503	PTE6S5		6TM-S5	Damper Filter
C97	500	20000		HV-20C	TV3-502				HV Filter
C98	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C99	.01	600	D827-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter

† Some models use 120MMF. in this application (Mfgr. Part # J665-35)
♦ Itmes C76A, C76B, C76C, R72A, R72B, R72C are combined in one unit.
† Some models use 47MMF. in this application.
* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	L285-1	Concentrikit	RTV-146	SBB-632	Vert. Hold Control - Front
B	50KΩ	½		B11-137 ♯			Horiz. Hold Control - Rear
C	Shaft end			B11-128 ♯			Attach per instructions in Concentrikit
R2	MMM	4	L268-1	E-187 ♯	RTV-181	SVP-998	Focus Control - Wire Wound
R3A	100KΩ	½	K347-3	Q11-128	AG-49-S	B-40-S	Brightness Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R3A per instructions
C	Switch		Not req.	76-2	SWP-2	Not req.	Attach to R3A per instructions
R4	1000Ω	½	K915-11		RTV-182		Contrast Control - Tapped at 750Ω
R5A	250KΩ	½	K915-8	Q11-130	AG-55-S	B-50	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R5A per instructions
R6A	2.5Meg	½	K915-10	Q11-239	AG-84-S	AN-83	Vert. Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	5000Ω	½	K915-9	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R7A per instructions
R8	350Ω	2	RA20A1SA35 1AK	W-400	43-400	VK-126	Horiz. Centering Control - Wire Wound

♯ Additional parts to be used with Concentrikit

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	4700Ω	20% ½		BTS-4700	Antenna Coil Shunt
R10	56KΩ	½		BTS-56K	AGC Network - See Note 2
R11	2200Ω	20% ½		BTS-2200	RF Amp. Decoupling
R12	15KΩ	½		BTS-15K	RF Coil Shunt
R13	4700Ω	½		BTS-4700	Mixer Grid
R14	220KΩ	½		BTS-220K	Mixer Grid
R15	10KΩ	½		BTS-10K	Osc. Grid
R16	4700Ω	½		BTS-4700	Osc. Plate
R17	100Ω	½	J569-13	BTS-100	Decoupling
R18	330Ω	½	J569-19	BTS-330	AGC Network
R19	10KΩ	½	J569-37		1st. Video IF Amp. Grid
R20	75Ω	½	J569-12		1st. Video IF Amp. Cathode - See Note 3
R21	220Ω	½	J569-17	BTS-220	1st. Video IF Amp. Decoupling
R22	10KΩ	½	J569-37		2nd. Video IF Amp. Grid
R23	75Ω	½	J569-12		2nd. Video IF Amp. Cathode - See Note 3
R24	100Ω	½	J569-13	BTS-100	2nd. Video IF Amp. Decoupling
R25	2700Ω	½	J569-30	BTS-2700	3rd. Video IF Amp. Grid
R26	82Ω	½	J569-13	BTS-82	3rd. Video IF Amp. Cathode
R27	100Ω	½	J569-13	BTS-100	3rd. Video IF Amp. Decoupling
R28	2700Ω	½	J569-30	BTS-2700	4th. Video IF Amp. Grid
R29	82Ω	½	J569-12	BTS-82	4th. Video IF Amp. Cathode
R30	100Ω	½	J569-13	BTS-100	4th. Video IF Amp. Decoupling
R31	47KΩ	½	J571-45	BTA-47K	Voltage Divider
R32	680KΩ	½	J569-59	BTS-680K	AGC Load
R33	1Meg	½	J569-61	BTS-1Meg	AGC Network
R34	3300Ω	½	J569-31	BTS-3300	5th. Video IF Transformer Shunt
R35	1000Ω	½	J569-25	BTS-1000	Bias Network
R36	8200Ω	½	J569-36	BTS-8200	Video Det. Diode Load
R37	100Ω	½	J569-13		Parasitic Suppressor
R38	22KΩ	5	E959-19	1 3/4A-22,500	Video Amp. Screen - Wire Wound
R39	27KΩ	5	E959-20		Video Amp. Plate - Wire Wound
R40	22KΩ	1	J571-41	BTA-22K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	IDENTIFICATION CODES
R41	5600Ω	1	J571-34	BTA-5600	Decoupling
R42	270KΩ	½	J569-54	BTS-270K	DC Restorer Diode Load
R43	2200Ω	5% ½	J569-29	BTS-2200-5%	Picture Tube Cathode
R44	100KΩ	½	J569-49	BTS-100K	Picture Tube Cathode
R45	22KΩ	1	J571-41	BTA-22K	Voltage Divider
R46	220KΩ	½	J569-53	BTS-220K	Voltage Divider
R47	75Ω	½	J569-12		1st. Sound IF Amp. Cathode - See Note 3
R48	1000Ω	½	J569-25	BTS-1000	1st. Sound IF Amp. Screen
R49	1000Ω	½	J569-25	BTS-1000	1st. Sound IF Amp. Decoupling
R50	470KΩ	½	J569-57	BTS-470K	2nd. Sound IF Amp. Grid
R51	1000Ω	½	J569-25	BTS-1000	2nd. Sound IF Amp. Cathode
R52	82KΩ	½		BTS-82K	2nd. Sound IF Amp. Screen - See Note 4
R53	1000Ω	½	J569-25	BTS-1000	2nd. Sound IF Amp. Decoupling
R54	18KΩ	1		BTA-18K	Voltage Divider
R55	15KΩ	½	J569-39	BTS-15K	Ratio Det. Diode Load
R56	120Ω	½	J569-14	BTS-120	Balancing - See Note 1
R57	15KΩ	½	J569-39	BTS-15K	De-emphasis
R58	470KΩ	½	J569-57	BTS-470K	AF Amp. Grid
R59	330KΩ	½	J569-55	BTS-330K	AF Amp. Plate - See Note 5
R60	220KΩ	½	J569-23	BTS-220K	Output Grid
R61	270Ω	1	J571-18	BTA-270	Output Cathode
R62	390Ω	1	J571-20	BTA-390	Decoupling
R63	4700Ω	½	J569-33	BTS-4700	Bias Network
R64	470KΩ	½	J569-57	BTS-470K	Bias Network
R65	820KΩ	½	J569-60	BTS-820K	Sync. Sep. Plate
R66	47KΩ	½	J569-45	BTS-47K	Voltage Divider
R67	470KΩ	½	J569-57	BTS-470K	Sync. Limiter Grid
R68	100KΩ	½	J569-49	BTS-100K	Sync. Limiter Plate
R69	1Meg	½	J569-61	BTS-1Meg	Sync. Amp. Grid
R70	4700Ω	½	J569-33	BTS-4700	Sync. Amp. Cathode
R71	3900Ω	½	J569-32	BTS-3900	Sync. Amp. Plate
R72A	22KΩ	♦ Q518-1 ♦		BTS-22K	Integrator
B	8200Ω	½		BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R73	1Meg	½	J569-61	BTS-1Meg	Vert. Osc. Grid
R74	100KΩ	½	J569-49	BTS-100K	Vert. Osc. Plate
R75	30KΩ	½		BTS-33K	Vert. Osc. Decoupling - See Note 8
R76	6.8Meg	½	J569-71	BTS-6.8Meg	Voltage Divider
R77	100KΩ	½	J569-49	BTS-100K	Voltage Divider
R78	4700Ω	½	J569-33	BTS-4700	Vert. Peaking
R79	2.2Meg	½	J569-65	BTS-2.2Meg	Vert. Output Grid
R80	560Ω	½	J569-22	BTS-560	Vert. Output Cathode
R81	2200Ω	20% ½	J569-29	BTS-2200	Vert. Output Decoupling
R82	100KΩ	½	J569-49	BTS-100K	Horiz. Phase Det. Diode Load
R83	100KΩ	½	J569-49	BTS-100K	Horiz. Phase Det. Diode Load
R84	4.7Meg	½	J569-69	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R85	27KΩ	½	J569-42	BTS-27K	Horiz. Phase Det. Diode Load
R86	10KΩ	½	J571-37	BTA-10K	Horiz. Feedback
R87	3000Ω	5% 2			Horiz. Feedback - See Note 6
R88	470KΩ	½	J569-57	BTS-470K	Horiz. AFC Filter
R89	1500Ω	½	J569-27	BTS-1500	Horiz. MV Cathode
R90	4700Ω	½	J569-33	BTS-4700	Horiz. MV Plate
R91	100KΩ	½	J569-49	BTS-100K	Horiz. MV Grid
R92	150KΩ	1	J571-51	BTA-150K	Horiz. MV Plate
R93	22KΩ	1	J571-41	BTA-22K	Horiz. MV Decoupling
R94	68Ω	½	J569-11		Parasitic Suppressor
R95	1Meg	½	J569-61	BTS-1Meg	Horiz. Output Grid
R96	10Ω	1		BW-1-10	Horiz. Output Cathode - See Note 7
R97	5600Ω	2	J572-34	BTB-5600	Horiz. Output Screen
R98	470KΩ	20% ½	J572-57	BTS-470K	Current Limiting
R99	3.3Ω	½	K097-42		HV Rectifier Filament
R100	470KΩ	1			HV Filter
R101	15Ω	1	J569-3	BW-1-15	Bias Network
R102	330KΩ	½	J569-55	BTS-330K	AF Amp. Screen - See Note 1
R103	1000Ω	½	J569-25	BTS-1000	Acc. Anode Load - See Note 1

♦ Items R72A, R72B, R72C, C76A, C76B, and C76C are combined into one unit.

Note 1 Not used in all models.
Note 2 Some models use 47KΩ Resistor in this application.
Note 3 Some models use 82Ω Resistor in this application.
Note 4 Some models use 100KΩ Resistor in this application.
Note 5 Some models use 33KΩ Resistor in this application.
Note 6 Some models use 2200Ω Resistor in this application.
Note 7 Some models use 15Ω Resistor in this application.
Note 8 Some models use 56KΩ Resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: NATIONAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.85A	760VCT .210ADC	5VAC ② 3A	6.3VAC ② 1.2A SEC. 4 6.3VAC ② 1.3A SEC. 5 6.3VAC ② 5.7A	L275-2		P-3066	TP-392 FO-615 *

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: NATIONAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	190Ω	1050Ω	L350	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans
T3	33Ω	365Ω SEC. 2 19Ω Taps 10Ω & 14Ω SEC. 3 0Ω			HVO-7		Horiz. Output Trans.
T4	1.3KΩ	100Ω	L253	A-8112 ①	A-3036 ①	TBO-5 ①	Vert. Output Trnas.
T5A	21Ω		P-283	DY-7	MDF-70		Horiz. Deflection Coils
B	60Ω						Vert. Deflection Coils
T6	1250Ω		P-825				Focus Coil

① Drill one new mounting hole.

NATIONAL MODELS TV-1701, TV-1702, TV-1725, TV-1727, TV-1729, TV-1730, TV-1731, TV-1732, TV-2029, TV-2030

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		NATIONAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	5kΩ	6-8Ω	380Ω	.9Ω	F-450		A-2902	RO-9	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	NATIONAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.2Ω	K892 ③	②ST119	46A1	② Viking Replacement -46J6
SP2A	PM	3.2Ω	K892 ③	②	46A1	③ Used in models 1701, 1702
SP3A	PM	6-8Ω	P-297 ④	ST119 Model P10-T		④ Used in models, 1725, 1727, 1729, 1730, 1731, 1732, 2029, and 2030,
	CONE DIA.	V. C. DIA.				
SP1B	4"X6"	9/16"				
SP2B	4"X6"	9/16"				
SP3B	10"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↶)	NATIONAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.220A	55Ω	2 Henries	K927	C-2325 ①	C-2991	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

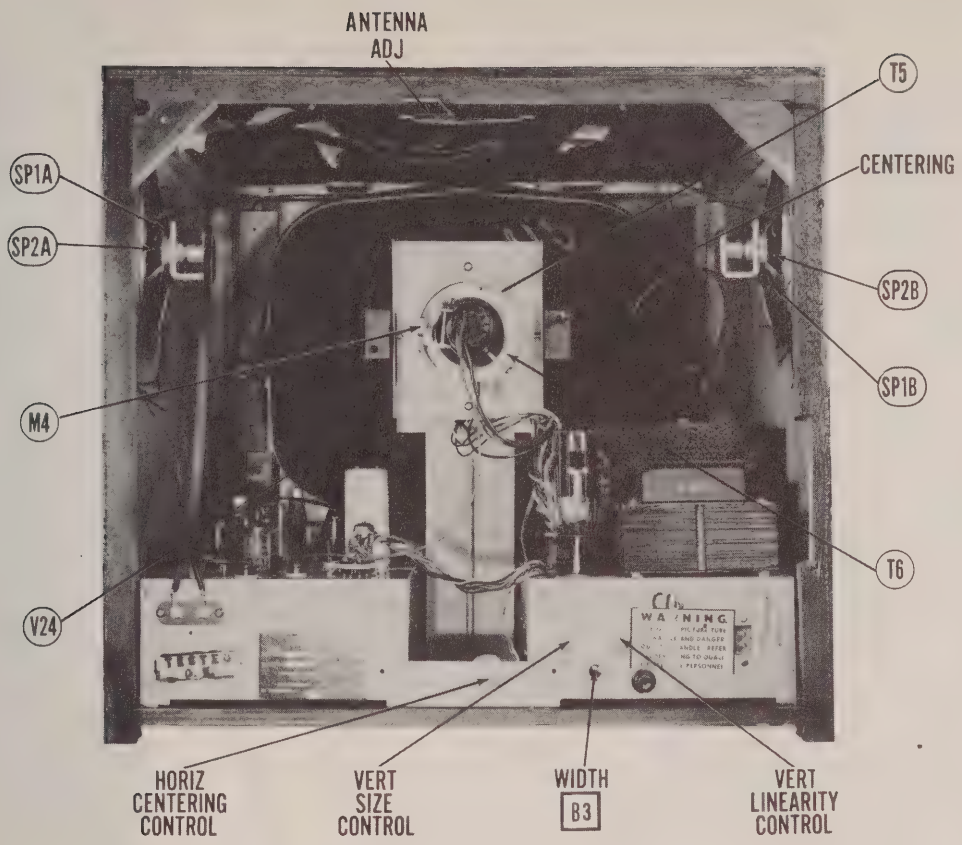
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	NATIONAL PART No.	MEISSNER PART No.	IRC PART No.	
L2A	Ant. Coil	0Ω	0Ω	SA6989-1			Channel 2
B	RF, Mixer			SA6989-2			Channel 3
	Grid and Osc.			SA6989-3			Channel 4
	Coils	0Ω		SA6989-4			Channel 5
				SA6989-5			Channel 6
				SA6990-1			Channel 7
				SA6991			Channel 8
				SA8660			Channel 9
				SA6990-2			Channel 10
				SA6992			Channel 11
				SA6993			Channel 12
				SA6994			Channel 13
L3	Fil. Choke	.8Ω		P278-2		CLA	1 Microhenry (Part of Tuner Part # SA-6461)
L4	Fil. Choke	.8Ω		P278-2		CLA	1 Microhenry (Part of Tuner Part # SA-6461)
L5A	Conv. Plate	0Ω					
	Trap			SA-7006-1			
B	RF Choke	1.6Ω		SA-7006-1			
L6	1st. Video IF	.4Ω		SA-6395-2			
L7	2nd. Video IF	.2Ω		SA-6395			
L8	3rd. Video IF	.2Ω		SA-6395			Some Models have Trap included.
L9	4th. Video IF	.2Ω		SA-6395			
L10	RF Choke	2.8Ω		P-278-1		CL-1	4.7Microhenries
L11	5th. Video IF	.2Ω		SA-6395			
L12	Peaking	3.6Ω		SA-5489			Wound on 47KΩ Resistor
L13	Peaking	12Ω		SA-5493			Wound on 1MegΩ Resistor
L14	4.5MC Trap	1.7Ω		SA-5516			
L15	Peaking	4.2Ω		SA-5492			Wound on 18KΩ Resistor
L16	Peaking	5.2Ω		SA-5491			Wound on 1Meg Resistor
L17	1st. Sound IF	1.7Ω		SA-6392			
L18	2nd. Sound IF	1Ω	1Ω	SA-6393			
L19	Ratio Det.						
	Trans.	8Ω	1.1Ω	SA-4997			Tap 1Ω
L20	Horiz. Osc.	120Ω		SA-5487			
L21	Width Coil	27Ω	31Ω	P-274			
L22	Horiz. Lin.	28Ω		P-273			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			NATIONAL PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	4A			312004	342001	
M2	3AG Pigtail	.250A			318.250		

MISCELLANEOUS

ITEM No.	PART NAME	NATIONAL PART No.	NOTES
M3	RF Tuner	SA-6461	
M4	Ion Trap	P437-1	
B2	Trimmer	K923-2	70-350MMF (Horiz. Drive)
	Knob	SA-5073	Focus, Off/On Brightness, Contrast,and Volume.
	Knob	SA-5503	Vert. Hold
	Knob	SA-5504	Fine Tuning
	Knob	SA-5505	Horiz. Hold
	Knob	SA-7013	Channel Selector
	Terminal Board	E265-18	Ant. Input
	Built-in Antenna	SA-6399	(Models TV-1701, TV-1702 use Part # SA-7017)
	Socket (11-Pin)	Q312-1	Power Chassis
	Socket (11-Pin)	L267-1	Video Chassis (Later productions use Q312-1)
	AC Receptacle	L283-1	
	AC Line Cord	L284-1	
	Cabinet	SA:6566	Model TV-1701
	Cabinet	SA:7444	Model TV-1702
	Cabinet	SA:7000	Model TV-1725
	Cabinet	SA:7445	Model TV-1727
	Cabinet	SA:8643	Model TV-1729
	Cabinet	SA:8644	ModelTV-1730
	Cabinet	SA:8645	Model TV-1731
	Cabinet	SA:8646	Model TV-1732
	Cabinet	SA:7460	Model TV-2029
	Cabinet	SA:7463	Model TV-2030
	Mask (17" Rect.)	Q445-2	Models TV-1701, TV-1702
	Mask (17" Rect.)	Q445-1	Models TV-1725, TV-1729, TV-1730, TV-1731, TV-1732
	Mask (20" Rect.)	Q517-1	Models TV-2029, TV-2030



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal AFC coil, (B1), until the picture synchronizes horizontally.

The picture should remain in synchronization over the entire range of the hold control, except extreme clockwise where the picture should show a tendency to slip to the right.

Adjust the horizontal drive trimmer, (B2), for best linearity in the left side of the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

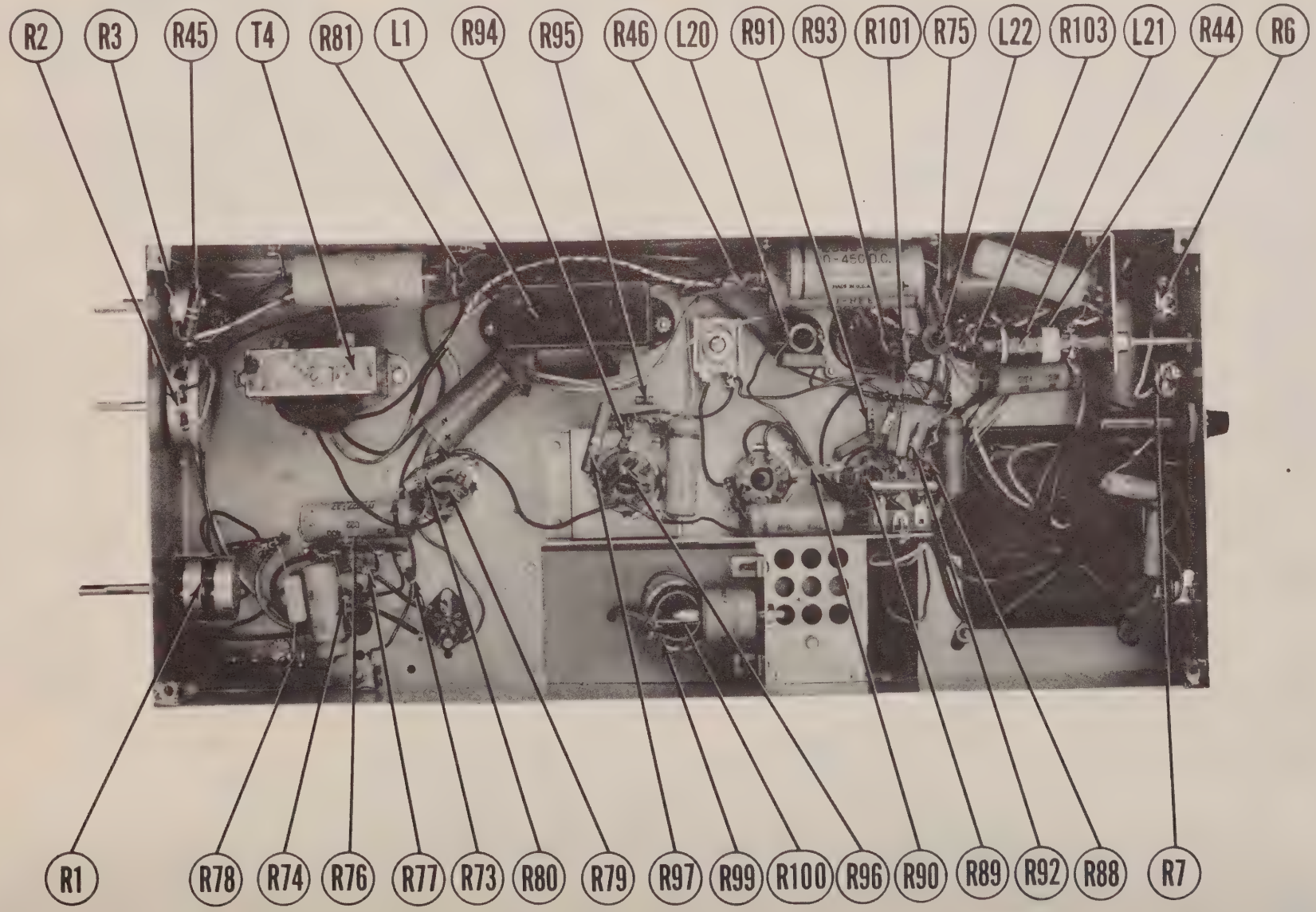
Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since the horizontal drive trimmer, effects both width and linearity it may be necessary to adjust them alternately for optimum results.

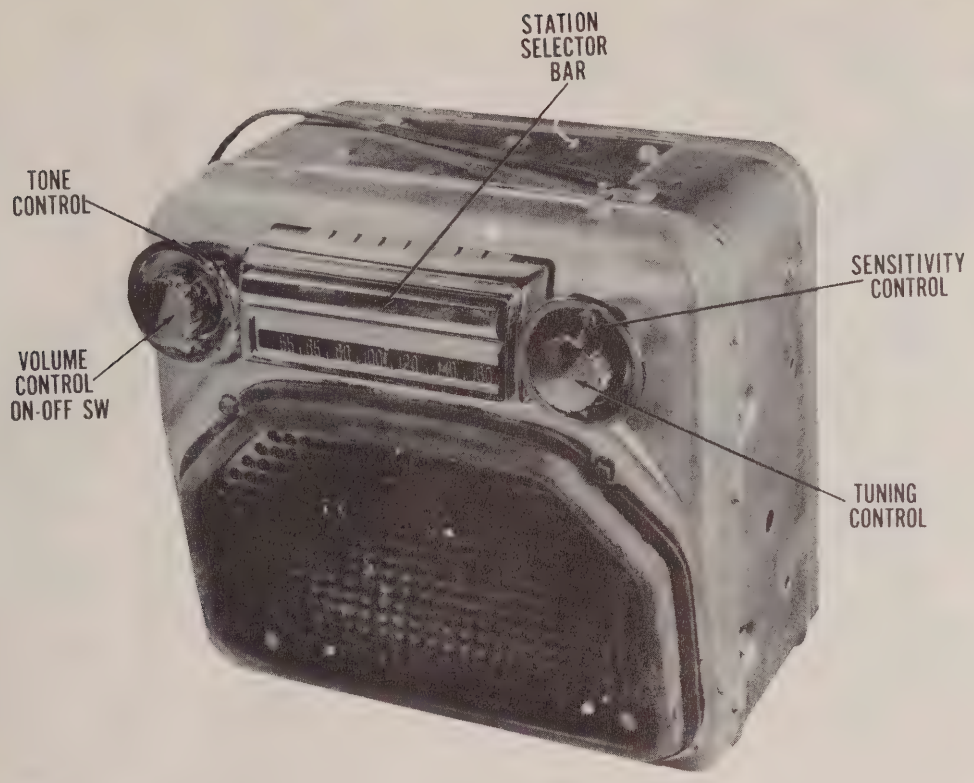
DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove metal strip securing Video and Power chassis together.
5. Disconnect chassis inter-connecting cable.
6. Remove four 5/16" hex nuts from each speaker. Remove both speakers.
7. Disconnect single green lead from picture tube socket.
8. Disconnect picture tube ground.
9. Disconnect high voltage lead.
10. Remove four 5/16" hex head bolts from Video chassis. Remove chassis.
11. Remove four 5/16" hex head bolts from Power chassis. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



POWER SUPPLY CHASSIS - RESISTOR IDENTIFICATION



PACKARD
MODEL 416394

PACKARD
MODEL 416394

TRADE NAME	Packard, Model 416394
SUPPLIER	Packard Motor Car Co., 1580 East Grand Blvd., Detroit, Michigan
TYPE SET	Battery Operated Custom-Built for 24 Series Packard, Superheterodyne Receiver
TUBES (NINE)	Types 6BA6 RF Amp., 6SA7 Converter, 6BA6 IF Amp., 6AQ7GT Det.-AF, 6AV6 AVC-Phase Inv. (2) 6V6GT Power Output, 12AU7 DC Amp.-Relay Trigger, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8, (Grid) of 6SA7, (V2). Low side to chassis.	260KC (400∿Mod.)	Tuning cores fully out. (high frequency end.)	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output in the order given.
2.	68MMF	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A5, A6, A7	Check the setting of the oscillator core. The rear of the core should be 1 25/32" from the mounting end of the coil form. (Insert a plug in form to measure.) If necessary adjust core. Adjust A5, A6, and A7 for maximum output.
3.	"	"	600KC	Tune for maximum output.	"	A8, A9	Adjust for maximum output.
4.	"	"	1615KC	High freq. end.	"	A6, A7	Adjust for maximum output. Repeat steps 3 and 4 until no further improvement can be made.
5.	"	"	1000KC	Tune for maximum output.	"	Pointer Adj.	Adjust pointer to 1000 on dial scale.

If the cathode delay adjust potentio meter (R2) has been replaced, or is known to be out of adjustment, adjust it as follows. (The automatic tuner will not operate properly with this control misadjusted)

(A) Set the input voltage to exactly 6 volts measured at the spark plate.

(B) Connect a voltmeter to pin 8 of V8 and adjust R2 for exactly 7.5V.

No alignment is required on the automatic tuner.

After set is installed fully extend the antenna and tune in a weak station in the 600KC to 1000KC range. Readjust A7 for maximum

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

SIGNAL SEEKING TUNER

GENERAL INFORMATION

The Signal Seeking Tuner is an electronically controled automatic mechanical tuner by which the operator can change stations by merely pressing a single station selector bar on the radio. On some models an auxiliary foot switch may also be used to change stations. The signal seeking operation is a uni-directional sweep of the broadcast band from low to high frequency with a nearly instantaneous return.

By use of the Sensitivity Control the number of stations on which the tuner will stop can be regulated. The extreme clockwise position gives maximum stopping sensitivity, while it allows the tuner to stop only on strong local stations when in the extreme counterclockwise position. This control is in the circuit only while the tuner is seeking and does not affect the "on station" sensitivity of the receiver.

CYCLE OF TUNER

The gear train is started in motion by momentarily depressing the station selector bar, which in turn, actuates the station selector switch. (Fig. 2) Contact #2 of the station selector switch opens first,ungrounding the secondary of the output transformer and muting the set as contact #1 closes. (Fig. 2) As contact #1 closes,a circuit is set up from B+ through the relay winding, the 13Kohm resistor (R36) (Fig. 2), the selector switch contacts, and the delay circuit resistor network to ground. Through this process,the relay (Fig. 1) is energized pulling the relay arm (Fig. 1) away from the paddle wheel (Fig. 1), starting the gear train in motion, opening contacts #2 and #4, and grounding relay contacts #1 and #3. (Fig. 2) The spring driven gear train is held at a constant speed by the nylon paddle wheel (Fig. 1). This paddle wheel is the end gear in the gear train,and acts as an air vane governor which tends to keep the speed constant.

The gear train receives its power from the power spring (Fig. 3), which is fastened to the lower plate of the planetary arm (Fig. 4). The planetary arm, which is mounted on an off center pivot, is pulled around its pivot as the power spring contracts, and at the same time, pulls the iron cores from the tuning coils by the action of the core bar (Fig. 3 and 5), which is linked to the upper planetary arm. (Fig. 4) The second power spring (Fig. 5), has a dual purpose, serving both as a power spring and an antibacklash spring. The primary linkage is from the tuner frame to the lever arm (Fig. 5), which is staked to the bell crank. (Fig. 5) At the bell crank the linkage splits, with one arm linked to the core bar at the extreme left end, and the other arm linked to the pointer. Thus, this spring helps pull the core bar in the high frequency direction when it is free to move and provides a spring loaded linkage between the core bar and the pointer helping move the pointer across the dial.

At this time, a signal actuates relay arm (Fig. 1) stopping paddle wheel by the action of contact #3 closing providing a path to ground for the cathode of the RF and IF amplifier tubes. This path is through the sensitivity control so the sensitivity of the set can be controled during the sweeping operation. Relay contact #1 is grounded thus lowering the cathode to ground resistance of the relay section of the trigger tube by putting the 6,800ohm resistor (R40) in parallel with the 47,000ohm cathode resistor (R38). This causes a lowering of the cathode voltage thereby causing an increased plate current flow which is sufficient to keep the relay energized and the tuner seeking. The tuner is stopped on station when a voltage from the incoming signal is developed in the primary and secondary of the second IF transformer (L7). The voltage in the secondary of the IF coil is rectified by the detector diode,developing a D.C. voltage across the 330, 000ohm resistor in the second IF coil can assembly. The voltage in the primary of the IF coil is rectified by the bucking diode, developing a D.C. voltage across the 1.5 megohm resistor in the second IF coil can assembly. The voltage developed by the bucking diode across the 1.5 megohm resistor opposes the voltage developed by the 330, 000ohm resistor. The resultant voltage is applied to the grid of the D.C. amplifier section of the trigger tube. This triggering voltage gives a substantially constant tuning accuracy for all signals. When the resultant triggering voltage on the grid of the D.C. amplifier becomes positive it causes the tube to conduct. The plate current flow in the D.C. amplifier section developes a biasing voltage across the 120, 000ohm resistor (R37) which is between grid and cathode of the relay section of the trigger tube making the grid more negative than the cathode thus reducing the plate current. The decrease in plate current flow causes the relay to be de-energized and the relay arm again engages the paddle wheel thereby stopping the tuner sweep station, opening contacts #1 and #3 and grounding relay contacts #2 and #4.

The tuner is held on station until a new station is desired when relay contact #1 is opened, ungrounding the 6800ohm resistor (R40), thus preventing any appreciable current flow in the relay. Relay contact #4 is grounded and this grounds the cathode circuits of the RF and IF amplifiers effectively by-passing the sensitivity control (M7), which is now ungrounded, and leaving the set at normal sensitivity. Relay contact #2 is grounded thereby grounding out the grid of the DC amplifier. Any voltage now developed across the 330, 000ohm resistor keeps the Bucking Diode from conducting by applying a negative voltage to its plate and the Detector Diode now functions as a conventional detector.

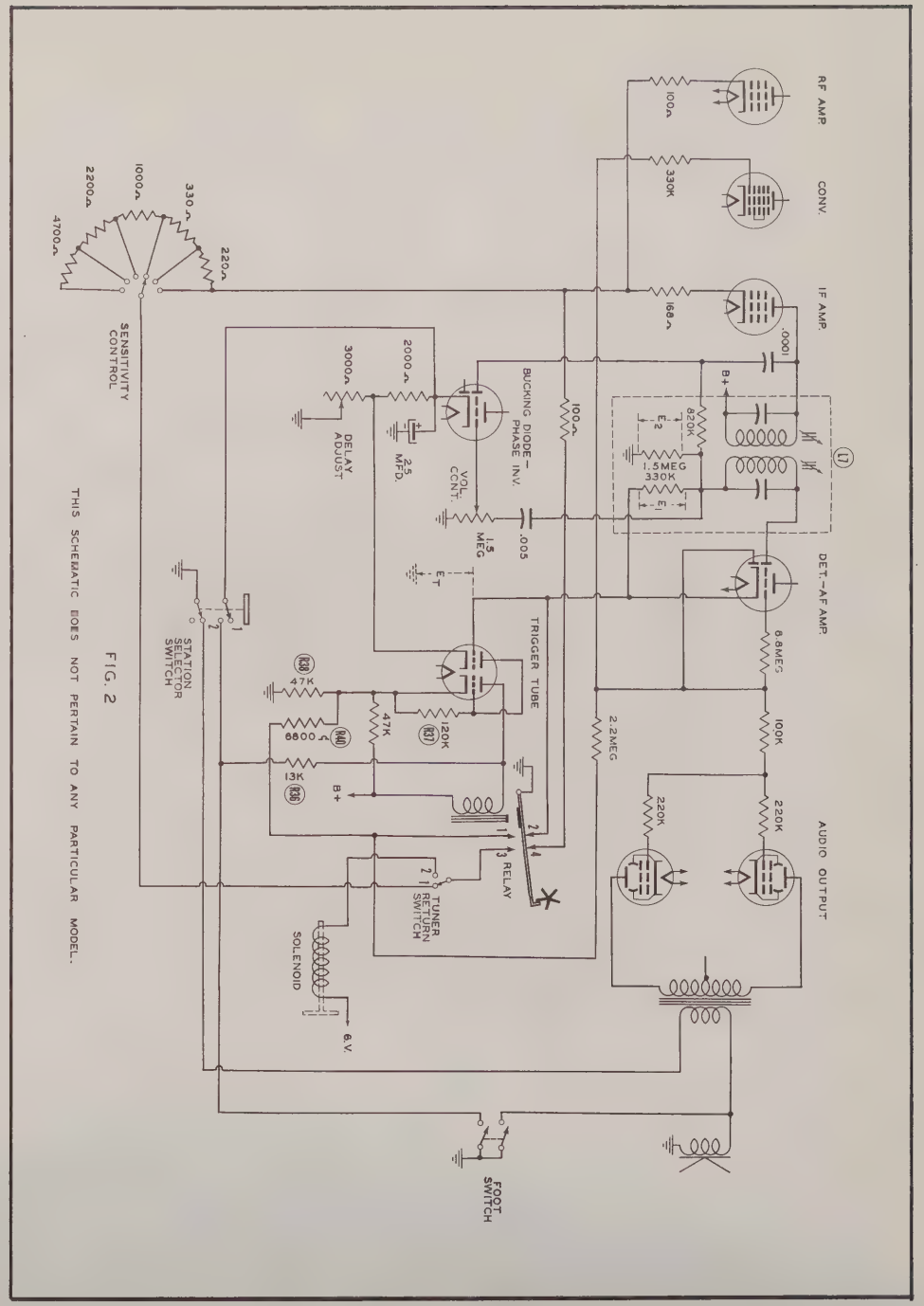


FIG. 2

THIS SCHEMATIC DOES NOT PERTAIN TO ANY PARTICULAR MODEL.

TUNER DETECTION CIRCUIT
(See Figs. 2 and 6)

The purpose of the tuner detection circuit is to take input signal voltages of varying strength and trigger the relay tube so that the tuner will stop accurately on the station frequency. A positive voltage developed by the signal on the grid of the D.C. amplifier section causes the tuner to trigger and stop. This is accomplished by using the Detector Diode and Bucking Diode to develope voltages of opposite polarity (E1 and E2) between grid and ground of the D.C. amplifier section of the Trigger Tube, thus effectively applying the algebraic sum of these voltages (Et) to this signal grid. (Note that contacts #2 and #4 of the relay are open.) These relative voltages plotted against frequency are shown in Fig. 6 using a station frequency of 1200KC. Notice the response curve of the voltage (E2) across the 1.5 megohm resistor is broader and not as large as the voltage (E1) developed across the 330,000ohm detector load. This is because the detector voltage has benefit of one more tuned circuit which gives the narrower curve. Also, there is a positive voltage appearing at the cathode of the Bucking Diode which will have the effect of lowering the voltage (E2) across the 1.5 megohm resistor because it will introduce a delay before the Bucking Diode will begin to conduct. This delay can be controled by the Delay Adjustment in the cathode of the Bucking Diode. This Delay Adjustment also controls the trigger level so that the mechanical delay is compensated for and the tuner stops exactly on station. It is a factory adjustment and should not be adjusted unless it is proven faulty.

Since the two diodes obtain their voltages from the same incoming signal, the strength of both voltages will vary directly with the strength of the incoming signal. Therefore, while they both rise and fall with variation in signal strength, their difference (Et), which is effectively the trigger pulse, will tend to remain constant. Thus, a station will be tuned in with the same degree of accuracy whether it is a strong or weak signal.

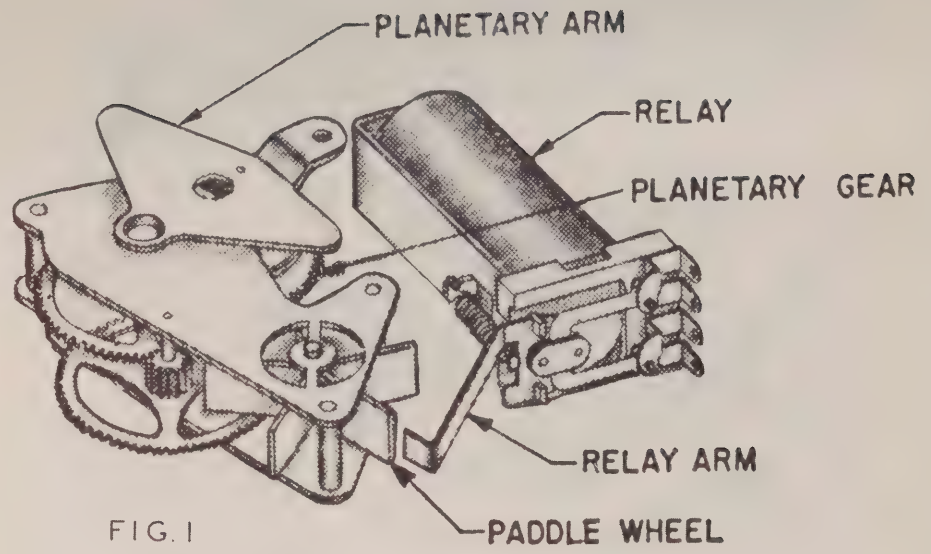


FIG. 1

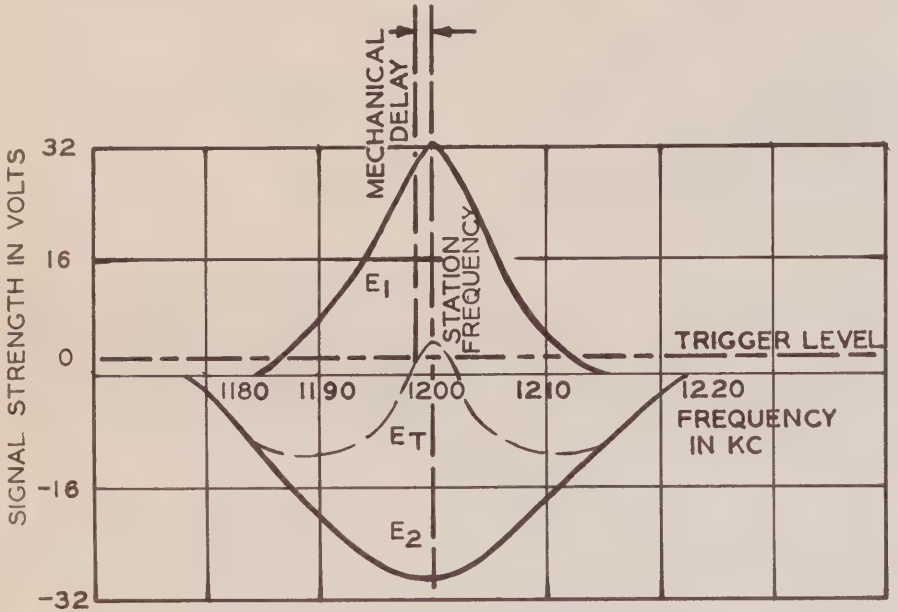


FIG. 6

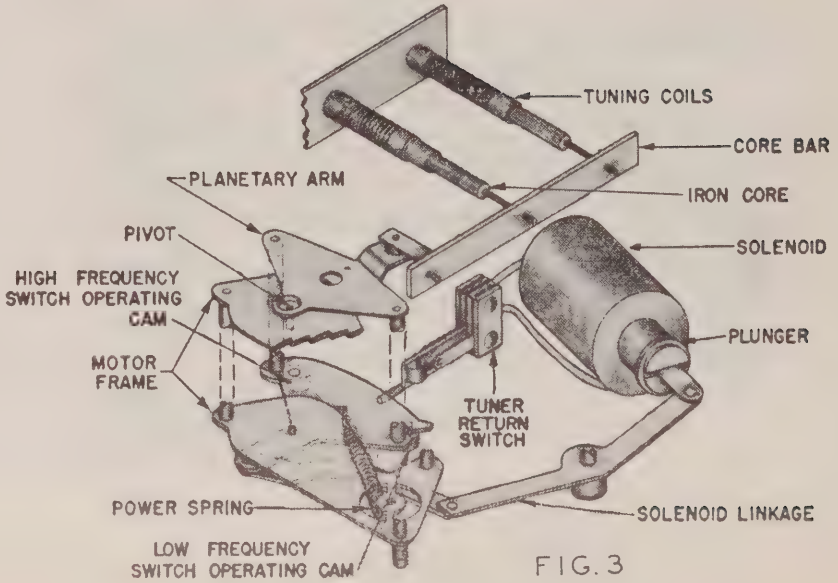


FIG. 3

SET 145 FOLDER 8

ADJUSTMENTS

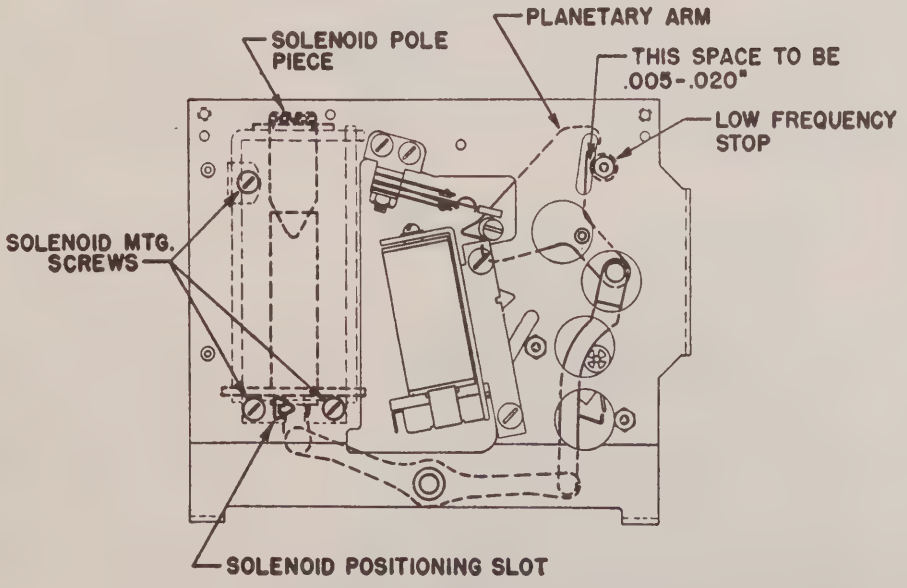
All adjustments are made accurately at the factory and do not require further adjustment unless it is proven they are wrong or parts are replaced. All adjustments are readily accessible and can be made without removing the tuner from the radio. All adjustments are made with the antenna disconnected from the radio. All adjustments can be reached by removing the front and rear covers and the adjustment cover on the top of the radio. The correct procedures for making these adjustments are as follows:

Solenoid Pole Piece Adjustment
(See Fig. 7)

1. With a screwdriver back the Solenoid Pole Piece out of the Solenoid.
2. Bottom the Solenoid Plunger in the Solenoid. The plunger is bottomed when the "C" washer collar on the plunger hits the frame of the Solenoid.
3. Screw the Solenoid Pole into the Solenoid until it just touches the plunger.
4. Back the pole piece off exactly 1½ turns.
5. Tighten the hex locking nut and seal with glypstal or shellac.

Solenoid Adjustment
(See Fig. 7)

1. With the radio turned off, connect a jumper wire across the 0.5mfd. condenser, on the cold side of the Solenoid. This is the only paper condenser found on the tuner.
2. Turn the radio on. (This energizes the Solenoid.)
3. Energize the Relay by momentarily depressing the station selector bar.
4. Loosen but do not remove the three solenoid mounting screws.
5. Using a screwdriver in the Solenoid Positioning Slot, turn the screwdriver and move the Solenoid until there is a 0.005 to 0.020 inch gap between the Planetary Arm and its Low Frequency Stop.
6. Tighten the three Solenoid Mounting Screws.
7. Turn the radio off and remove the jumper wire from the condenser.



SOLENOID POSITIONING ADJUSTMENT
FIG. 7

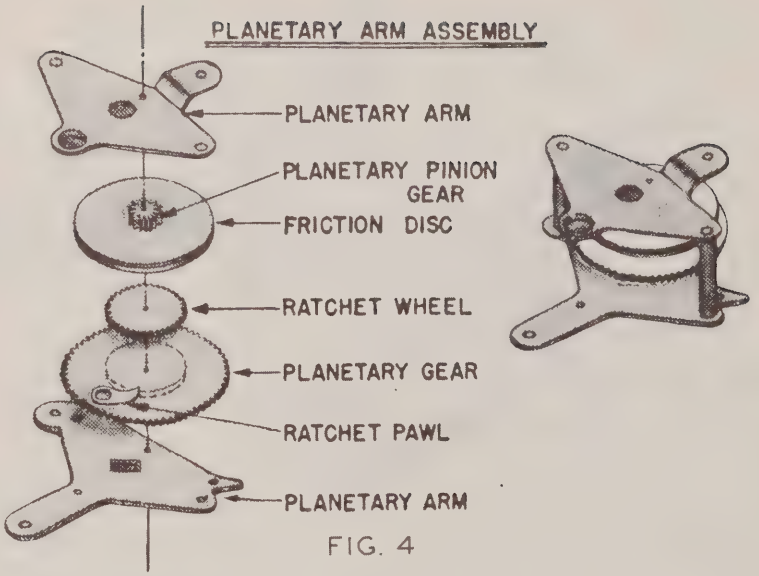


FIG. 4

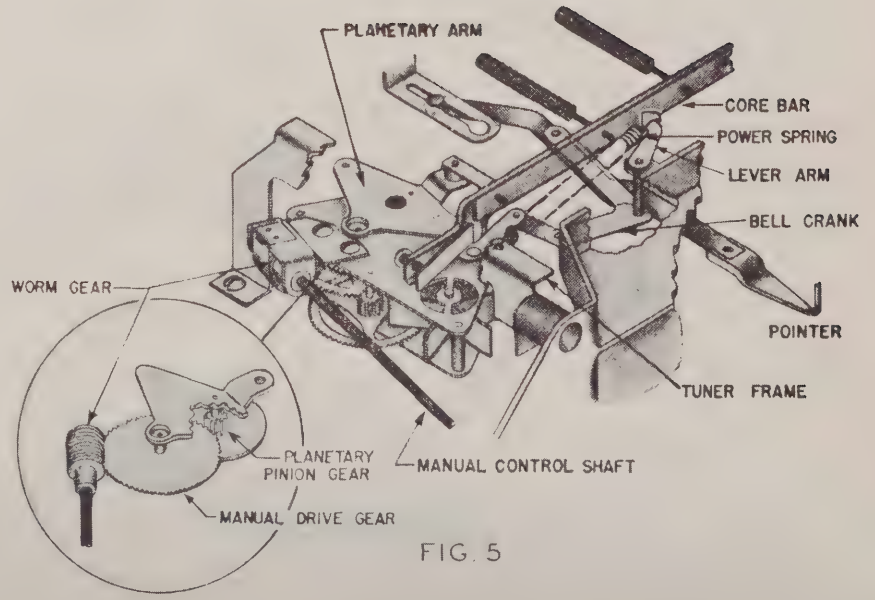


FIG. 5

Relay Adjustment
(See Fig. 8)

This is the only adjustment of the relay that should be attempted in the field.

1. With the radio turned off, connect a jumper wire across the 0.5mfd. condenser, on the cold side of the Solenoid. This condenser is found on the tuner.
2. Turn the radio on. (This energizes the Solenoid.)
3. Energize the Relay by momentarily depressing the Station Selector Bar.
4. Loosen but do not remove the two Relay Mounting Screws.
5. Using a screwdriver in the Relay Positioning Slot, turn the screwdriver and move the relay until there is a gap of approximately 0.030 or 1/32" between the top of the Relay Arm and the tip of the blades on the Paddle Wheel.
6. Tighten the two Relay Mounting Screws.
7. Turn the radio off and remove the jumper wire from the condenser.

Switch Operating Cam Adjustment
(See Fig. 9)

This adjustment should be made whenever the Motor Gear Train or the Tuner Return Switch is replaced. Its purpose is to set the timing of the tuner Return Switch.

1. With the radio turned off, insert a 0.060 inch feeler gauge through the slot against the Low Frequency Stop. Number 14 bare wire is a satisfactory gauge.
2. Position the Planetary Arm against the feeler gauge. This can be done with the manual tuning control or, on radios without this control, the Planetary Arm can be moved directly or by moving the core guide bar to the low frequency end of the broadcast band (tuning cores all the way in the coils).

Caution: On radios having no manual-tuning control, the planetary arm can be moved only toward the low frequency stop without damaging the motor gear train.

3. With a small screwdriver move the low frequency switch operating cam to a position furthest from the Tuner Return Switch.
4. Trip the Tuner Return Switch so that its operating arm is toward the cam.
5. Turn the Low Frequency Switch Operating Cam in a counterclockwise direction until it trips the switch.
6. Insert a 0.060 inch feeler gauge through the slot against the High Frequency Stop.
7. Position the planetary arm against the feeler gauge.

Caution: Do not use direct force to move the planetary arm.

The planetary arm can be positioned either by using the manual tuning control or on radios without a manual control as follows:

(a) Turn the radio on and depress the Station Selector Bar.
(b) Turn the radio off very close to the high frequency end of the broadcast band.
(c) With a screwdriver turn the Switch Operating Cam to the position furthest from the Tuner Return Switch.
(d) Turn the radio on and press the station selector bar.
(e) Allow the Planetary Arm to run against the feeler gauge.
(f) Turn the radio off.

8. Turn the Switch Operating Cam to the position furthest from the Tuner Return Switch if this has not already been done.
9. Trip the Tuner Return Switch so that its operating arm is towards the cam.
10. Turn the High Frequency Switch Operating Cam in a clockwise direction until it trips the Tuner Return Switch.

Cathode Delay Adjustment

This adjustment controls the tuning accuracy of the radio and is carefully adjusted at the factory. This adjustment should not be made unless the part is replaced.

If this adjustment is necessary, refer to the Photofact Folder covering the radio in question.

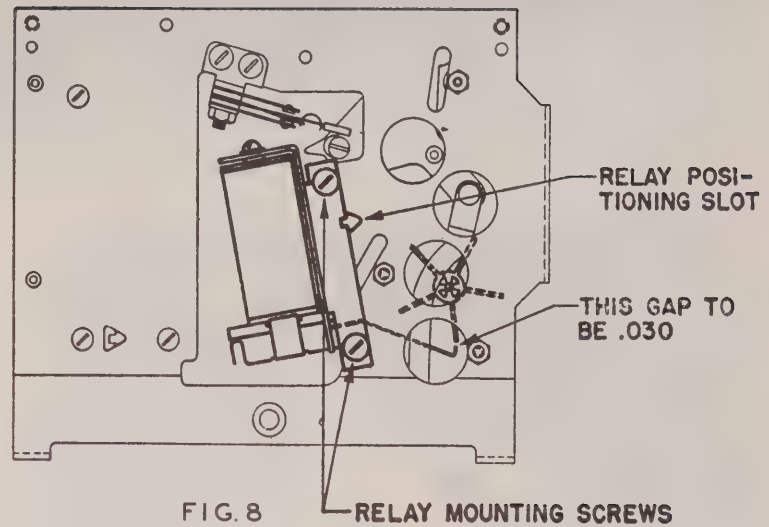


FIG. 8

RELAY POSITIONING ADJUSTMENT

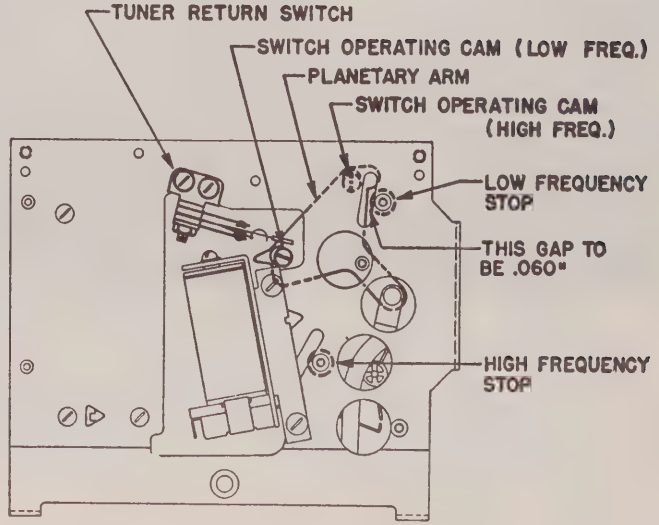


FIG. 9

SWITCH OPERATING CAM ADJUSTMENTS

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA PACKARD PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	5252	6BA6	7BK	
V2	Converter	5222	6SA7	8R	
V3	IF Amplifier	5252	6BA6	7BK	
V4	Detector-AF Amp.	5278	6AQ7GT	8CK	
V5	AVC-Phase Inv.	5262	6AV6	7BT	
V6	Power Output	5241	6V6GT	7AC	
V7	Power Output	5241	6V6GT	7AC	
V8	DC Amp.-Relay Trigger	5328	12AU7	9A	
V9	Rectifier	5003	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PACKARD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	M908	E3C152		UP2245C		TVL-3678	■ Filter ▲ Filter
B	20	400							
C	20	25							Output Cathode
C2	20	50	1219660	PRS50/25		BR205A		TVA-1306	Phase Inv. Cathode
C3	.1	400	E104	P488-1	DF-104	PTE4P1		4TM-P1	RF Amp. Screen
C4	.05	200	E503	P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Cathode
C5	.05	200	E503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C6	68	500	G680	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	RF Coupling
C7	39	500	G390	1469-00004	TCZ-39	5R5Q4	NPOL-390	MS-44	Fixed Trimmer
C8	260		7257567				NO80-333-261		Fixed Trimmer
C9	.1	200	E104	P288-1	DF-104	PTE4P1		2TM-P1	IF Amp. Cathode
C10	.002	600	E202	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C11	.1	200	E104	P288-1	DF-104	PTE4P1		2TM-P1	AF Amp. Cathode
C12	.001	600	E102	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AF Amp. Plate
C13	.015	600	7237719	P688-015		PTE6S15		6TM-S15	Audio Coupling
C14	.02	400	E203	P488-02	DF-203	PTE4S2		4TM-S2	Tone Comp.
C15	.005	600	E502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C16	.02	600	E203	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C17	.008	800	H802			PTE16D8		MB-D8	Output Plate
C18	68	500	G680	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	IF Coupling
C19	.0022	600	1219553	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	DC Amp. Grid Filter
C20	100	500	G101	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	RF Bypass
C21	.006	1600	H602	P1688-005		PTE16D6		MB-D6	Buffer Cap.
C22	.5	100	E504	P188-5		GT2P5		68P20	Hash Filter
C23	.005	600	E502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C24	.25	200	E254	P488-25		6T2P25		2TM-P25	Bias Filter

CONTROLS

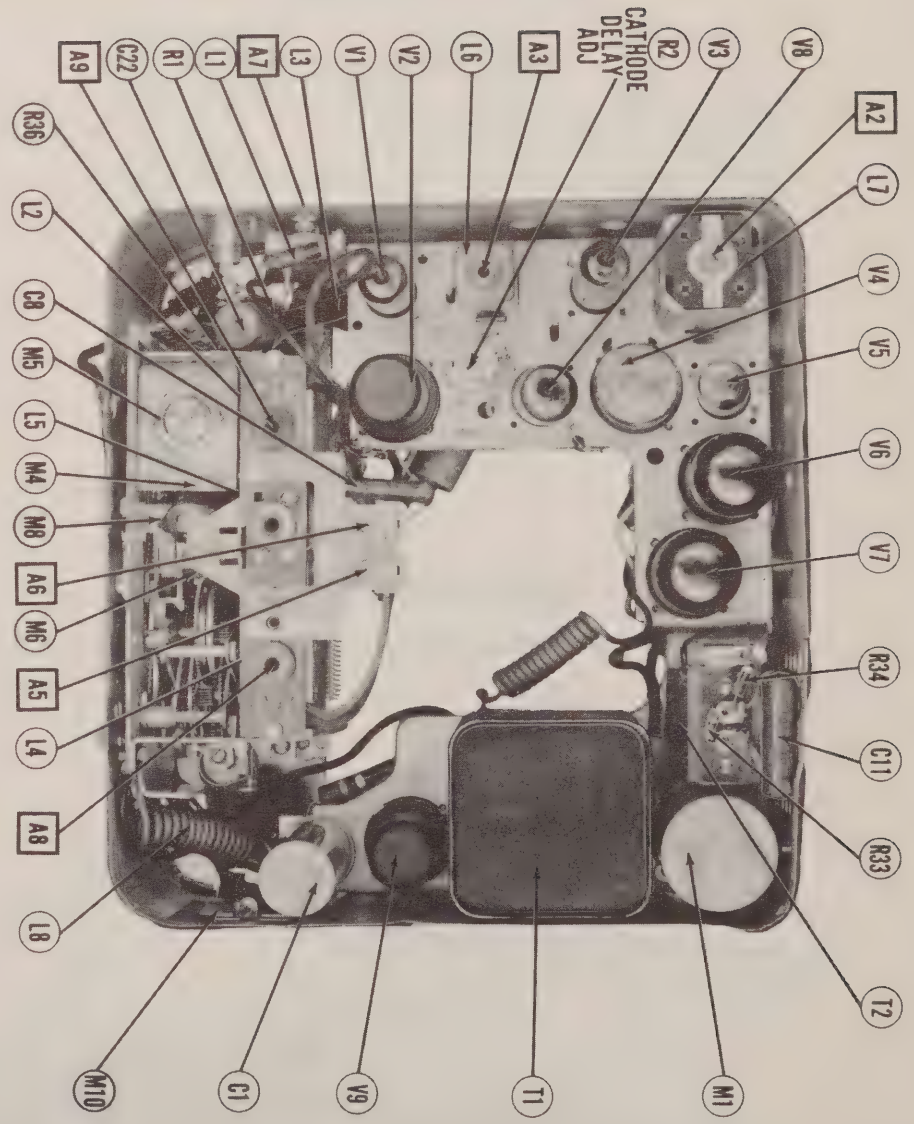
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PACKARD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
				Concentrikit			
R1A	2Meg	½	7260230	B13-139 *			Tone Control-Front
B	1.5Meg	½		B13-139 *			Volume Control-Rear
C	Shaft End			E-187 *			Attach Per Instructions in Concentrikit
D	Switch			76-1 *			Attach Per Instructions in Concentrikit
E	Bushing			S-5 ø*			Attach to R1
R2	3000Ω	1	7259408				Cathode Delay Adj. -Wire Wound-Minimum Res. 1500Ω

* Additional parts to be used with concentrikit.
ø Fashion bushing to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PACKARD PART No.	IRC PART No.	IDENTIFICATION CODES
R3	2.2Meg	½	A225	BTS-2.2Meg	AVC Network
R4	82Ω	½	A820	BTS-82	RF Amp. Cathode-See Note 2
R5	10KΩ	1	B103	BTA-10K	RF Amp. Plate
R6	330KΩ	½	A334	BTS-330K	AVC Network
R7	1.5Meg	½	A155	BTS-1.5Meg	AVC Network
R8	22KΩ	1	B223	BTA-22K	Osc. Grid
R9	12KΩ	2	1212491	BTB-12K	Screen Dropping-See Note 6
R10	10Ω	½	A100		Parasitic Suppressor

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PACKARD PART No.	IRC PART No.	
R11	330KΩ	½	A334	BTS-330K	Bias Network
R12	82Ω	½	A820	BTS-82	IF Amp. Cathode-See Note 2
R13	68Ω	½	A680	BTS-68	IF Amp. Cathode
R14	100KΩ	½	A104	BTS-100K	Sensitivity Network-See Note 1
R15	200Ω	½	A221		Sensitivity Network-See Note 3
R16	330Ω	½	A331	BTS-330	Sensitivity Network
R17	1000Ω	½	A102	BTS-1000	Sensitivity Network
R18	2200Ω	½	A222	BTS-2200	Sensitivity Network
R19	4700Ω	½	A472	BTS-4700	Sensitivity Network
R20	200Ω	½	A221		Sensitivity Network-See Note 3
R21	1.5Meg	½	A155	BTS-1.5Meg	Diode Load
R22	1500Ω	½	1219504	BTS-1500-5%	Phase Inv. Cathode-See Note 4
R23	6.8Meg	½	A685	BTS-6.8Meg	Phase Inv. Grid
R24	56KΩ	1	1213509	BTA-56K	Cathode Delay Network
R25	220KΩ	½	A224	BTS-220K	Phase Inv. Plate
R26	6.8Meg	½	A685	BTS-6.8Meg	AF Amp. Grid
R27	330Ω	1	A331	BTA-330-5%	AF Amp. Cathode-See Note 5
R28	220KΩ	½	A224	BTS-220K	AF Amp. Plate
R29	220KΩ	½	A224	BTS-220K	Output Grid
R30	220KΩ	½	A224	BTS-220K	Output Grid
R31	100KΩ	½	A104	BTS-100K	Output Grid
R32	360Ω	1	7234563	BW-1-360	Output Cathode-Wire Wound
R33	470Ω	½	A471	BTS-470	Feedback Network
R34	3300Ω	½	A332	BTS-3300	Feedback
R35	1.5Meg	½	A155	BTS-1.5Meg	Sensitivity Network
R36	13KΩ	1	7231539		Voltage Divider
R37	120KΩ	½	A124	BTS-120K	Relay Trigger Grid
R38	47KΩ	1	B473	BTA-47K	Relay Trigger Cathode
R39	47KΩ	1	B473	BTA-47K	Relay Network
R40	6800Ω	1	B682	BTA-6800	Trigger Tube Cathode
R41	3.3Meg	½	A335	BTS-1Meg	DC Amp. Plate Load
R42	1800Ω	2	1214573	BW-2-1800	Filter-Wire Wound
R43	220Ω	1	B221		Hash Suppressor
R44	330KΩ	½	A334	BTS-330K	Sensitivity Network

Note 1 Not used in all models.
Note 2 Some models use 100Ω resistor in this application.
Note 3 Some models use 220Ω resistor in this application.
Note 4 Some models use 1600Ω resistor in this application.
Note 5 Some models use 390Ω resistor in this application.
Note 6 Some models use parallel resistors in this application to obtain desired value.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @4.2A	540VCT .062ADC			7255881	P-6473 ②	P-4079	VT-4

② Drill new mounting hole.

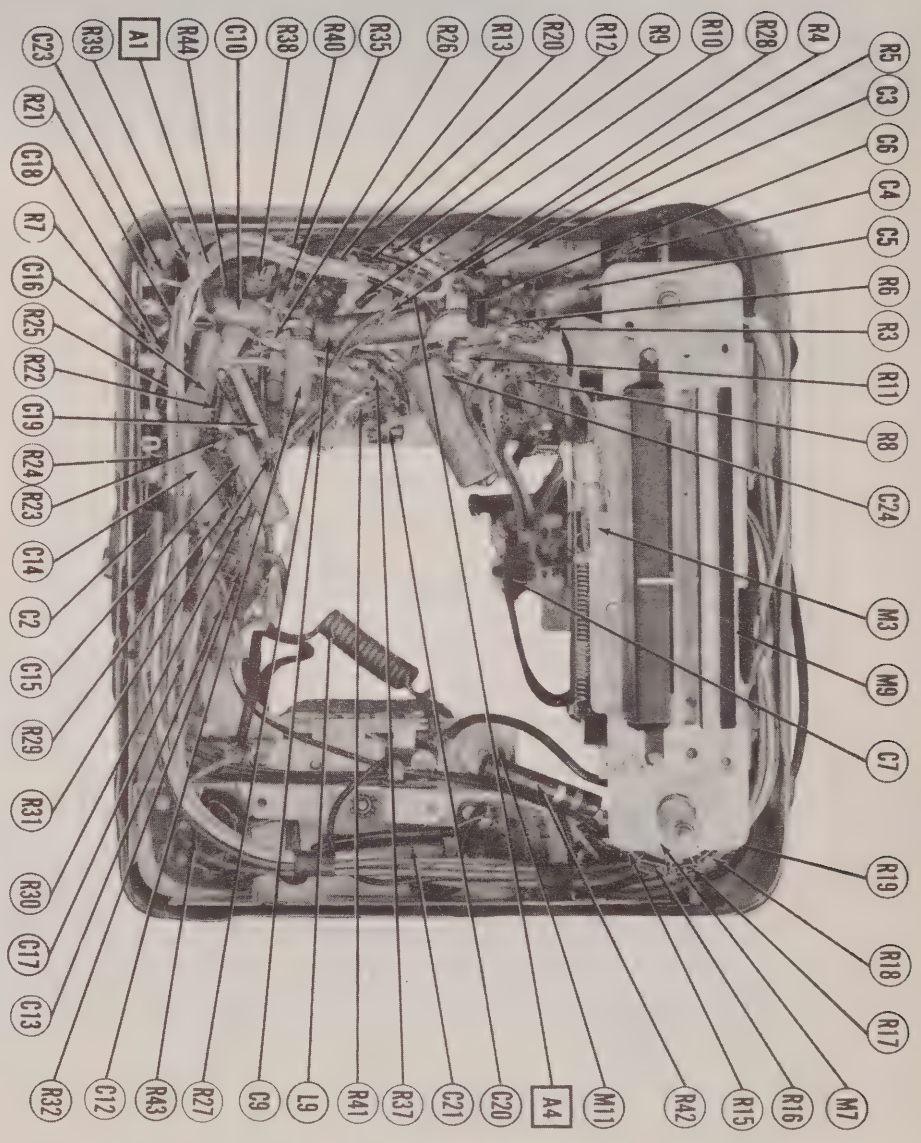
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	7.5KΩ CT	4.3Ω	390Ω CT	.3Ω	7260006	A-3850 ①			① Bend mounting tabs down and mount in original chassis holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PACKARD PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD RES.	V. C. IMP.		ST810		
SP1	PM	4.3Ω	7260362	Mod. P69-V	69A2	
	CONE DIA.	V. C. DIA.				
SP2	6"X9"	1"				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PACKARD PART No.	MEISSNER PART No.	
L1	Ant. Hash Choke	.8Ω		7255738		
L2	Ant. Coil	10Ω		7257979		
L3	Ant. Coupling Choke	5Ω		7240251		
L4	RF Coil	10Ω		7257979		
L5	Osc. Coil	4.5Ω	1.1Ω	7259184		
L6	1st IF	42Ω	42Ω	1219508	16-6752	
L7	2nd IF	18Ω		1219602		
L8	Hash Choke	0Ω		7259187		
L9	Hash Choke	0Ω		1217846		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				PACKARD PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6.3V	115 ∿	8542	5300	5300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PACKARD PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	147685		307014	155014A	

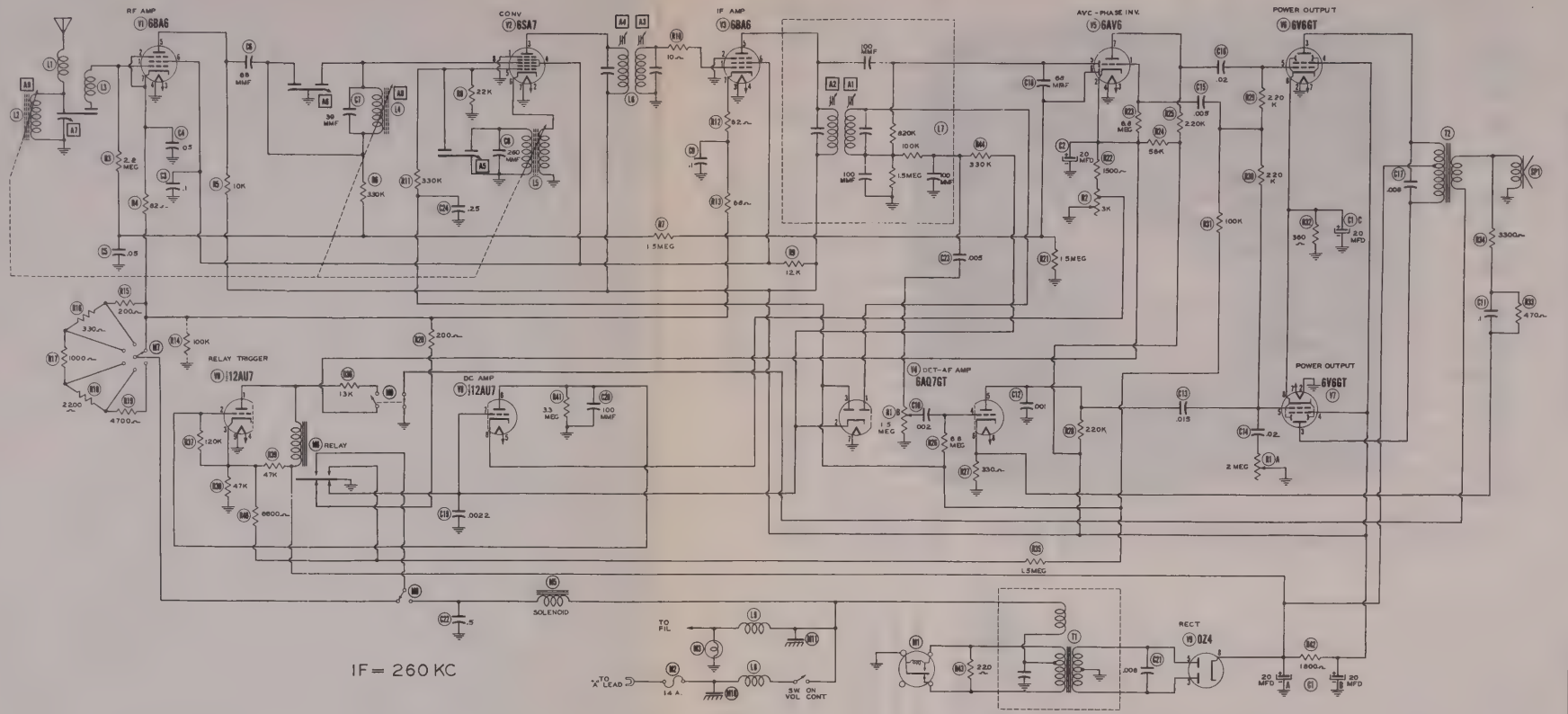
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PACKARD PART No.		
M3	Bayonet	6-8	.23	Blue	187189		Type #44.

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD PART No.	NOTES
M4	Tuner Unit		
M5	Solenoid	1219661	
M6	Relay	7259009	
M7	Switch	7260222	Sensitivity
M8	Switch	7259011	Tuner Return
M9	Switch	7259012	Station Selector
M10	Spark Plate	7241259	
M11	Spark Plate	1217848	
A5 }	Dual Trimmer	7242454	{ Osc. Adj.
A6 }			RF Adj.
A7	Trimmer	7260158	Ant. Adj.
	Pointer	7260309	Assembly



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	- .4VDC	2. 6VDC	6VDC	0V	160VDC	85VDC	2 6VDC		
V 2	6BA7	0V	6VDC	160VDC	85VDC	9-9.2VDC	0V	0V	0V	
V 3	6BA6	0V	0V	0V	6VDC	165VDC	85VDC	2 6VDC		
V 4	6AQ7GT	-.3VDC	0V	-.1VDC	-.3VDC	65VDC	-.1VDC	0V	6VDC	
V 5	6AV6	.2VDC	6.6VDC	6VDC	0V	-.2VDC	0V	94VDC		
V 6	6V6GT	0V	0V	236VDC	195VDC	0V	0V	6VDC	.3VDC	
V 7	6V6GT	0V	0V	235VDC	195VDC	0V	0V	6VDC	.3VDC	
V 8	12AU7	240VDC	90VDC	105VDC	6VDC	6VDC	90VDC	0V	7.8VDC	0V
V 9	0Z4	0V	0V	370VAC	0V	370VAC	0V	0V	340VDC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

ALL MEASUREMENTS TAKEN WITH TUNER NOT SEEKING.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	5 2Meg	28Ω	6Ω	0Ω	72KΩ	114KΩ	38Ω		
V 2	6BA7	0Ω	6Ω	11.8KΩ	114KΩ	22KΩ	1.1Ω	0Ω	3 3Meg	
V 3	6BA6	33Ω	0Ω	0Ω	6Ω	11.8KΩ	114KΩ	38Ω		
V 4	6AQ7GT	33KΩ	0Ω	33KΩ	8.3Meg	122KΩ	33KΩ	0Ω	6Ω	
V 5	6AV6	8.8Meg	28Ω	6Ω	0Ω	1.1Meg	122KΩ			
V 6	6V6GT	Inf.	0Ω	720Ω	11.8KΩ	64KΩ	114Ω	Inf	6Ω	360Ω
V 7	6V6GT	Inf.	0Ω	720Ω	11.8KΩ	64KΩ	330KΩ	6Ω		360Ω
V 8	12AU7	73.2KΩ	116KΩ	120KΩ	6Ω	6Ω	116KΩ	0Ω	1 6KΩ	0Ω
V 9	0Z4	0Ω	Inf.	300Ω	Inf.	300Ω	Inf.	Inf.	35KΩ	

† MEASURED FROM PIN 8 OF V9.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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SCOTT (H.H.)
MODEL 210-B

SCOTT (H.H.)
MODEL 210-B

TRADE NAME	Scott (H. H.), Model 210-B
MANUFACTURER	Hermon Hosmer Scott, 385 Putnam Avenue, Cambridge, Mass.
TYPE SET	AC Operated Audio Amplifier
TUBES (TEN)	Types 12SL7 Pre-Amp., 6J5 1st AF Amp., 6SG7 Treble Gate, 6SG7 Bass Gate, 6SQ7 AF Control, 12SL7 2nd AF Amp., 6SN7GT 3rd AF-Phase Inv., (2) 6L6G Power Output, 5V4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.2 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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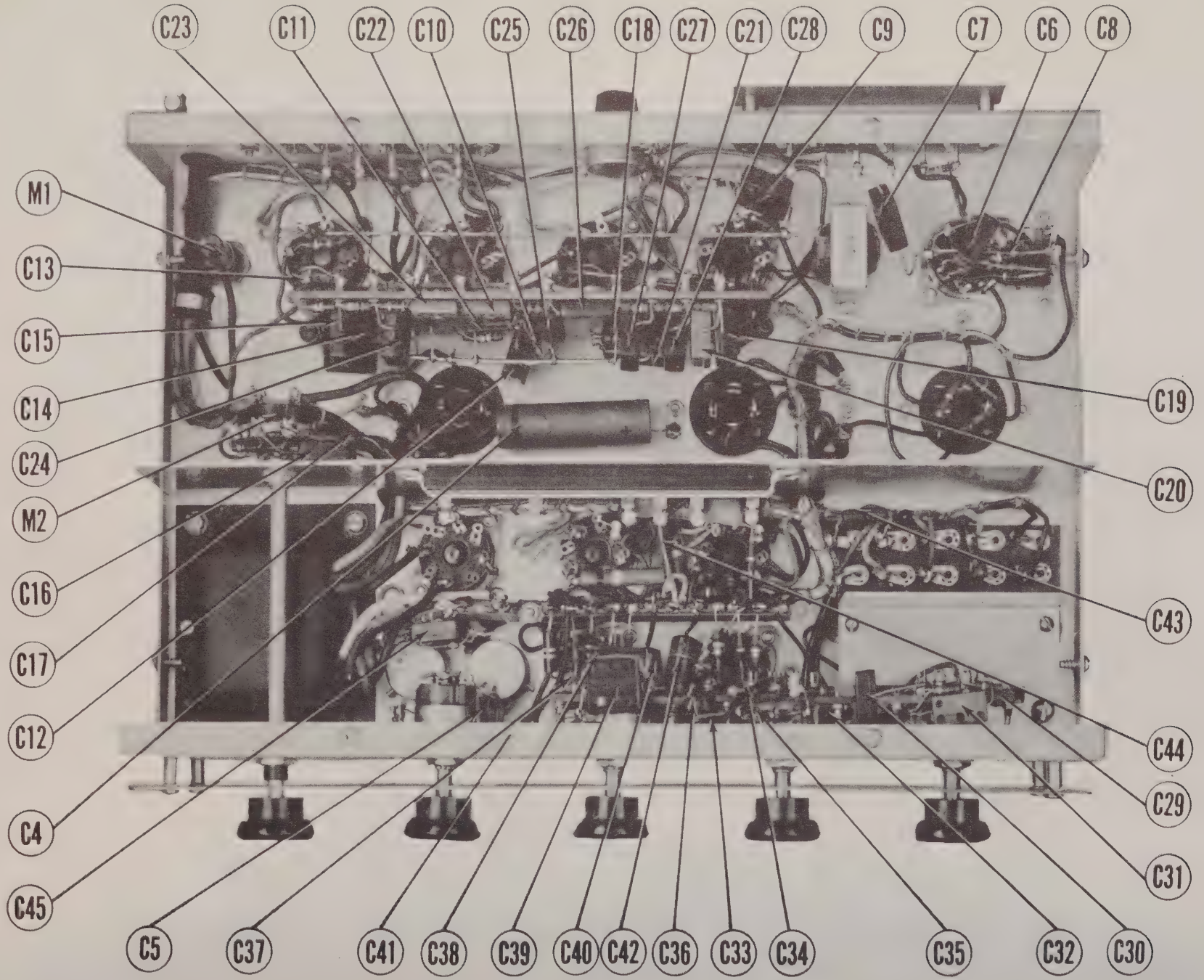
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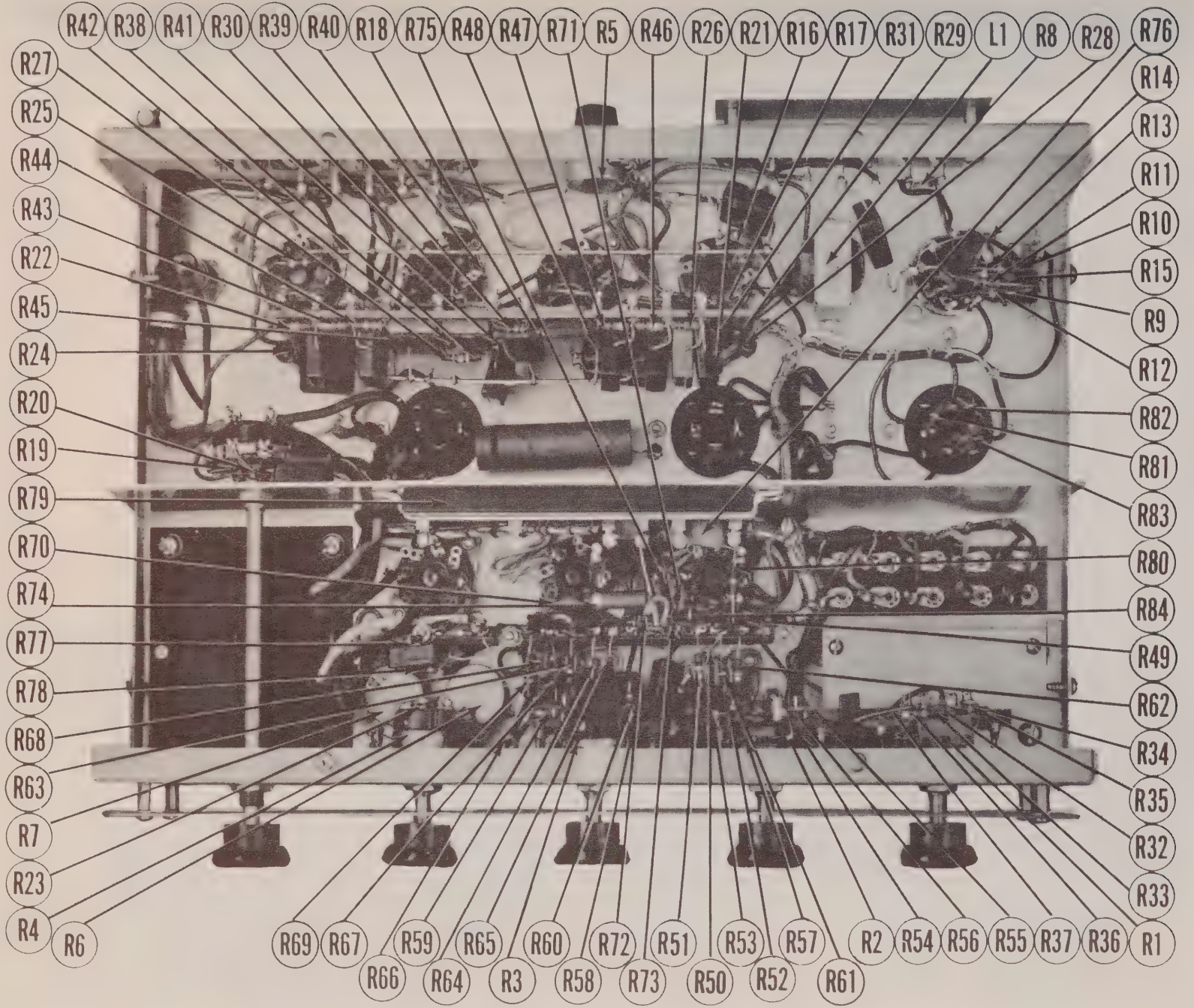
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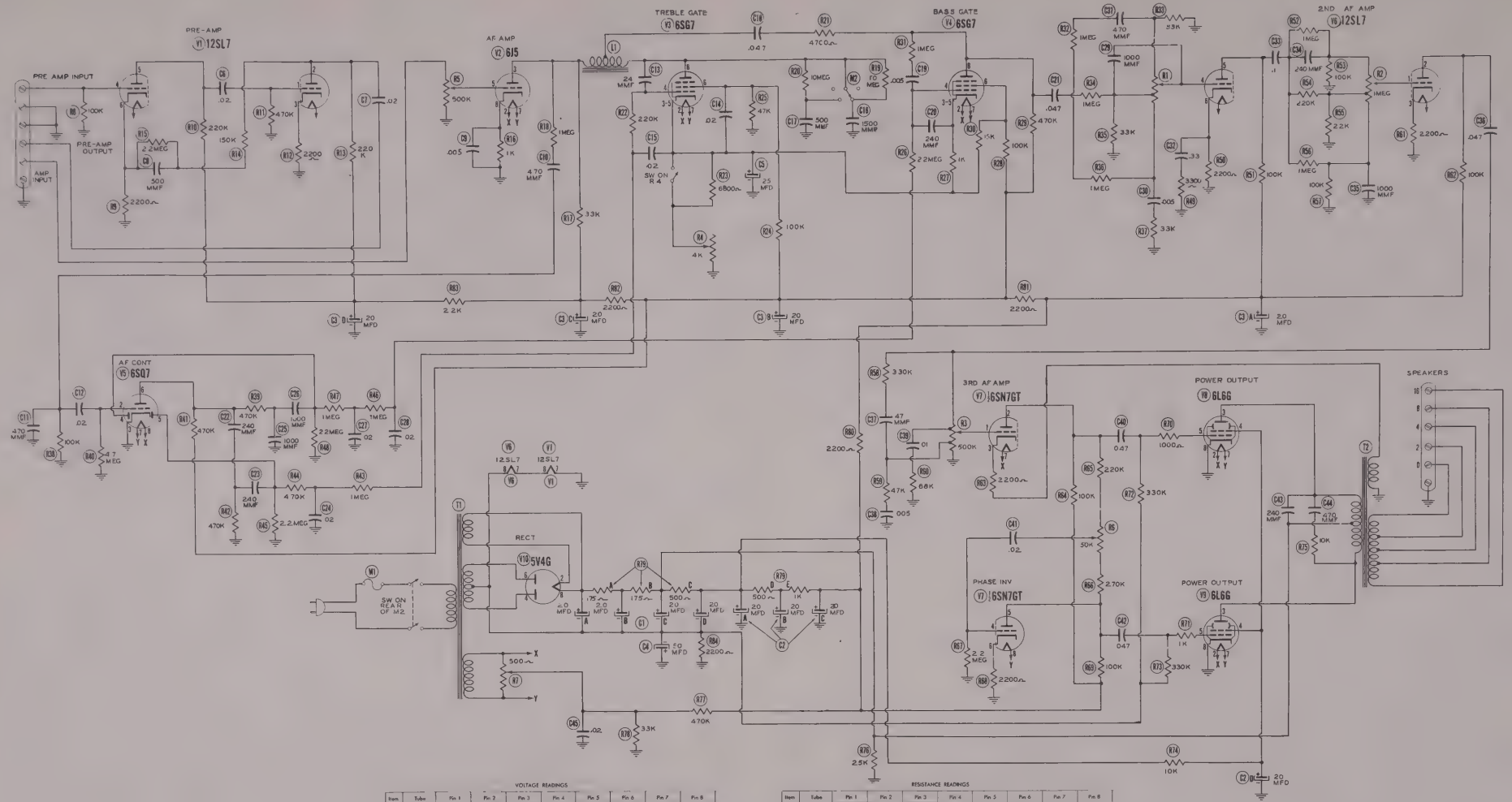

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SL7	0V	85VDC	1.2VDC	0V	105VAC	1.2VDC	0V	-12VDC
V 2	6J5	0V	¶	120VDC	245VDC	0V	0V	¶	4.2VDC
V 3	6SG7	0V	¶	26VDC	0V	26VDC	85VDC	¶	120VDC
V 4	6SG7	0V	¶	25VDC	0V	25VDC	60VDC	¶	245VDC
V 5	6SQ7	0V	- 6VDC	0V	- 6VDC	- 6VDC	80VDC	¶	¶
V 6	12SL7	0V	100VDC	2VDC	0V	100VDC	2VDC	-24VDC	-12VDC
V 7	6SN7GT	0V	115VDC	4.8VDC	0V	115VDC	4.8VDC	¶	¶
V 8	6L6G	0V	¶	340VDC	290VDC	-11.8VDC	0V	¶	0V
V 9	6L6G	0V	¶	340VDC	290VDC	11.8VDC	350VDC	¶	0V
V 10	5V4G	0V	385VDC	0V	330VAC	0V	330VAC	0V	385VDC

¶ MEASURED 6.3VAC ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SL7	470KΩ	1230KΩ	2.2KΩ	100KΩ	1230KΩ 500KΩ	2.2KΩ	0Ω	12Ω
V 2	6J5	0Ω	±0Ω	140KΩ	†8.7KΩ	0Ω	Inf.	± 1Ω	1KΩ
V 3	6SG7	0Ω	±0Ω	10KΩ	5.8Meg	10KΩ	25KΩ	± 1Ω	147K
V 4	6SG7	0Ω	±0Ω	[illegible]	6.4Meg	11KΩ	123KΩ	± 1Ω	1470KΩ
V 5	6SQ7	0Ω	4.7Meg	0Ω	2.2Meg	2.2Meg	1470KΩ	± 1Ω	±0Ω
V 6	12SL7	80KΩ	†100KΩ	2.2KΩ	30KΩ	† 100KΩ	2.2KΩ	24Ω	12Ω
V 7	6SN7GT	0Ω	†100KΩ	2.2KΩ	2.2Meg	†100KΩ	2.2KΩ	±0Ω	± 1Ω
V 8	6L6G	0Ω	±0Ω	1375Ω	†10KΩ	330KΩ	Inf.	± 1Ω	0Ω
V 9	6L6G	0Ω	±0Ω	1375Ω	†10KΩ	330KΩ	10KΩ	± 1Ω	0Ω
V 10	5V4G	Inf.	17KΩ	Inf.	100Ω	Inf.	100Ω	Inf.	17KΩ

† MEASURED FROM PIN 8 OF V10
± MEASURED FROM PIN 2 OF V9

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OUTPUT CONNECTIONS

The output transformer is tapped to match any speaker impedance from 1 to 24 ohms.

Speaker Impedance	Connect to Terminals
1 - 2½ ohms	0 - 2
3 - 5 ohms	0 - 4
6 - 10 ohms	0 - 8
11 - 24 ohms	0 - 16

The speaker line should be grounded by connecting a jumper between terminals "0" and "G", unless speaker leads are shielded or otherwise grounded.

PICKUP CONNECTIONS:

For short runs in the absence of strong magnetic fields a single conductor shielded cable will suffice; the center conductor connected to the PRE-AMP. IN terminal and the shield connected to G. When hum is picked up on the pickup lead (when the hum can be eliminated by shorting PRE-AMP. IN to G) it will help to use double conductor shielded cable, connecting one wire to PRE-AMP. IN and the other wire, together with the shield, to G. At the pickup end the shield is left unconnected and the pickup cartridge connected to the inner conductors.

Further reduction of hum can often be accomplished by grounding the frame of the motor or record changer and the pickup shell or arm to the shield of the pickup lead or to the chassis of the Amplifier.

When a tuner is not used, a jumper wire should be connected between the PRE-AMP. OUT and AMP. IN terminals.

TUNER CONNECTIONS:

Tuners should be connected by single conductor shielded cable directly to the AMP. IN terminals, omitting the jumper wire to the PRE-AMP. OUT terminal. If it is desired to use the "Phono-Radio" switch incorporated in many tuners, the PRE-AMP. OUT terminal may be connected by single-conductor shielded cable to the phonograph input of the tuner. It is essential that the "Phono–Radio" switch in the tuner connects the PRE-AMP. OUT to the AMP. IN directly (not through any condensers, volume, or tone controls) in the "Phono" position.

The tuner output level should be adjusted to the same volume level as that obtained during phonograph operation and operated at that point. The volume should than be adjusted to the desired level by the LOUDNESS control on the amplifier. The tuner should be able to deliver 0.5 volt on loud signals.

OPERATION:

The Power Switch is located on the RANGE control.

The RANGE control provides a sharp high-frequency cutoff for reduction of distortion and noise above the cutoff frequency in kilocycles. For normal record playing, this control should be turned to 12; the range on old, worn or distorted records should be reduced to 6, and on high-quality vinylite records and FM programs the 22kc range can be used.

The Suppressor is completely inoperative when the DYNAURAL control is turned to DYN. OFF. The control should be advanced only as far as necessary to reduce the noise to a satisfactory level. The mid-position is usually adequate except for very noisy records.

The TREBLE and BASS controls provide a boost when turned to the right from mid-position, and attenuation when turned to the left from mid-position. The setting of these controls depends on the type of record played, the speaker, the acoustics of the room, and the listener's preference.

LEVEL ADJUSTMENT:

The SUPP. LEVEL Control on the rear of the Amplifier chassis compensates for the various output voltages of different pickups. If the control is set too high, noise will be heard superimposed on the loud passages of the music. When it is set too low, the music will be dull and muffled. The best setting is that at which all records can be played by merely readjusting the panel controls.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA H. H. SCOTT PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Pre-Amplifier	12SL7	12SL7	8BD	
V2	1st AF Amplifier	6J5	6J5	6Q	
V3	Treble Gate	6SG7	6SG7	8N	
V4	Bass Gate	6SG7	6SG7	8N	
V5	AF Control	6SQ7	6SQ7	8Q	
V6	2nd AF Amplifier	12SL7	12SL7	8BD	
V7	3rd AF Amplifier Phase Inverter	6SN7GT	6SN7GT	8BD	
V8	Power Output	6L6GT	6L6GT	7AC	
V9	Power Output	6L6GT	6L6GT	7AC	
V10	Rectifier	5V4G	5V4G	5L	

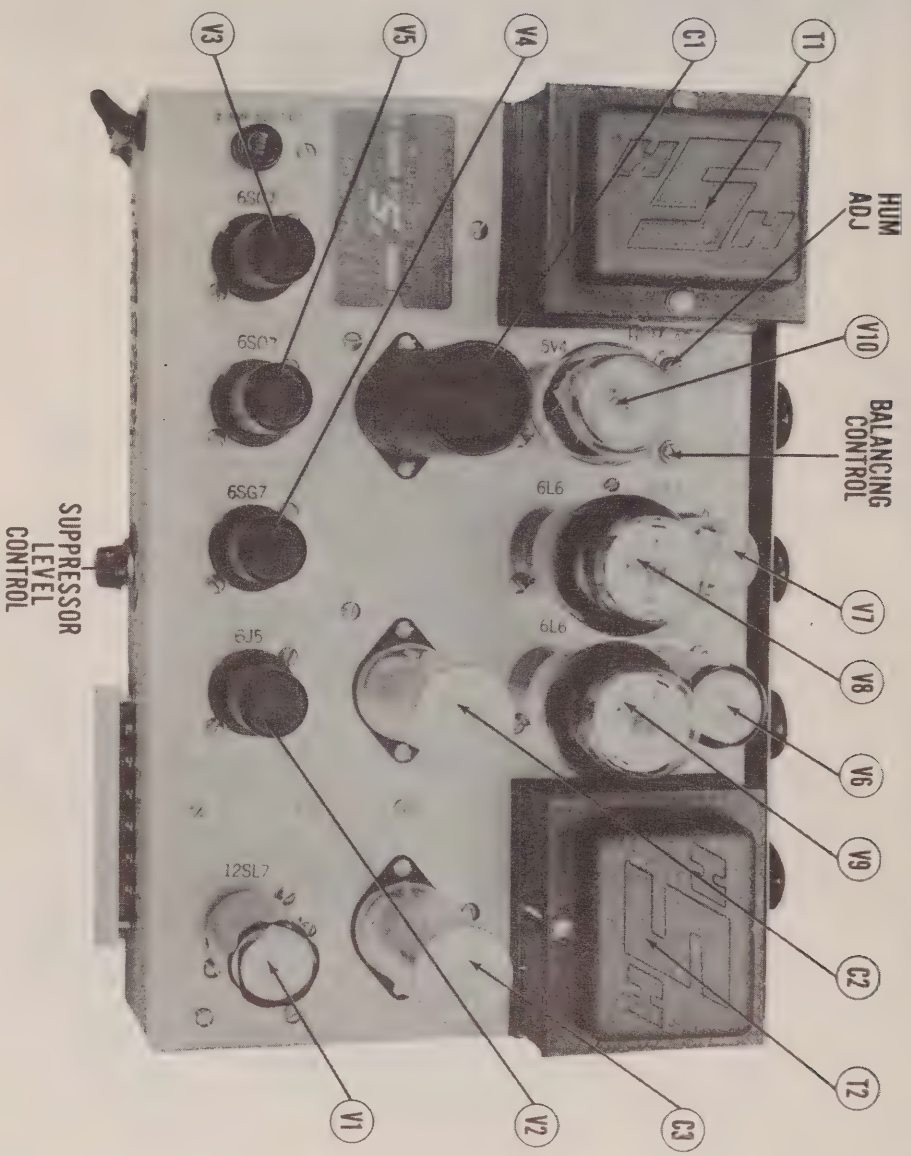
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA H. H. SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	475							● Filter
B	20	475		AF4444X		UP222245		R1084	■ Filter
C	20	475							▲ Filter
D	20	475							Filter
C2A	20	475							● Filter
B	20	475		AF4444X		UP222245			■ Filter
C	20	475						R1084	▲ Filter
D	20	475							Output Screen
C3A	20	475							● Filter
B	20	475		AF4444X		UP222245		R1084	■ Filter
C	20	475							▲ Filter
D	20	475							Filter
C4	50	100		PRS150/50		BR5015A		TVA-1414	Bias Filter
C5	25	25		PRS25/25		BR252A		TVA-1205	Treble Gate Cathode
C6	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C7	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C8	1500	500		1467-0015	D6-152	1W5D15	GP2L-152	1FM-215	Tone Comp.
C9	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	4TM-D5	AF Amp. Cathode
C10	470	500		1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Tone Comp.
C11	470	500		1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Tone Comp.
C12	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C13	24	500		1468-000025		5W5Q25	GP1K-240	MS-425	Audio Coupling
C14	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Treble Gate Screen
C15	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Feedback
C16	1500	500		1467-0015	D6-152	1W5D15	GP2L-152	1FM-215	Tone Comp.
C17	500	500		1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	Tone Comp. †
C18	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C19	.005	400		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C20	2400	500		1467-0025		1W5D25			AF Feedback
C21	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C22	240	500		1468-00025		5W5T25	GP2K-241	1FM-325	Treble Diode Coupling
C23	240	500		1468-00025		5W5T25	GP2K-241	1FM-325	Treble Diode Coupling
C24	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Treble Diode Filter
C25	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Bass Diode Filter
C26	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Bass Diode Coupling
C27	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Bass Diode Filter
C28	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Bass Diode Filter
C29	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Tone Comp.
C30	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C31	470	500		1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Tone Comp.
C32	.33	200		P288-33					2nd AF Amp. Cathode
C33	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C34	240	500		1468-00025		5W5T25	GP2K-241	1FM-325	Tone Comp.
C35	1000	500		1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Tone Comp.
C36	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C37	47	500		1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Tone Comp.
C38	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C39	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C40	.047	400		P488-047	DF-503	PTE4S5		4TM-S47	Audio Coupling
C41	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C42	.047	1200		1684-05		GT16S5		MB-S5	Audio Coupling
C43	240	500		1468-00025		5W5T25	GP2K-241	1FM-325	Tone Comp.
C44	470	500		1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Tone Comp.
C45	.02	200		P488-02	DF-203	PTE4S2		2TM-S2	Hum Adjust Filter

† Some models use 680MMF in this application.

CHASSIS—TOP VIEW



SILVERTONE
MODEL 237 (Ch. 488.237)

SILVERTONE
MODEL 237 (Ch. 488.237)

SILVERTONE
MODEL 237 (Ch. 488.237)

TRADE NAME	Silvertone, Model 237
SUPPLIER	Sears Roebuck & Co., 925 South Homan Street, Chicago, Illinois
TYPE SET	AC Operated Record Player with 3 Tube Amplifier
TUBES (THREE)	Types 12SQ7GT AF Amp., 50L6GT Power Output, 35ZGT Rectifier
POWER SUPPLY	110-120 Volts AC
RATING	.22 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950 IN SET 131 FOLDER 17.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amplifier	12SQ7GT	12SQ7GT	8Q	
V2	Power Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	3832	PRS150/50-		EDL42215		TVA-3444	Filter
B	20	150		30-20		BR202A		TVA-1306	Filter
C	20	50							Output Cathode
C2	.003	600	2850	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Audio Coupling
C3A	250			SI250		5W5T25	GP2K-251	1FM-325	AF Amp. Plate
B	.01		3614 ♦	P688-01	PC-81 ♦	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C	250			SI250		5W5T25	GP2K-251	1FM-325	Output Grid
C4	.003	600	2850	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C5	.08	400	2894	P488-1	DF-104	PTE4P1		4TM-P1	Isolation

♦ Items C3A, C3B, C3C, R6A, R6B are combined in one unit.

CONTROLS

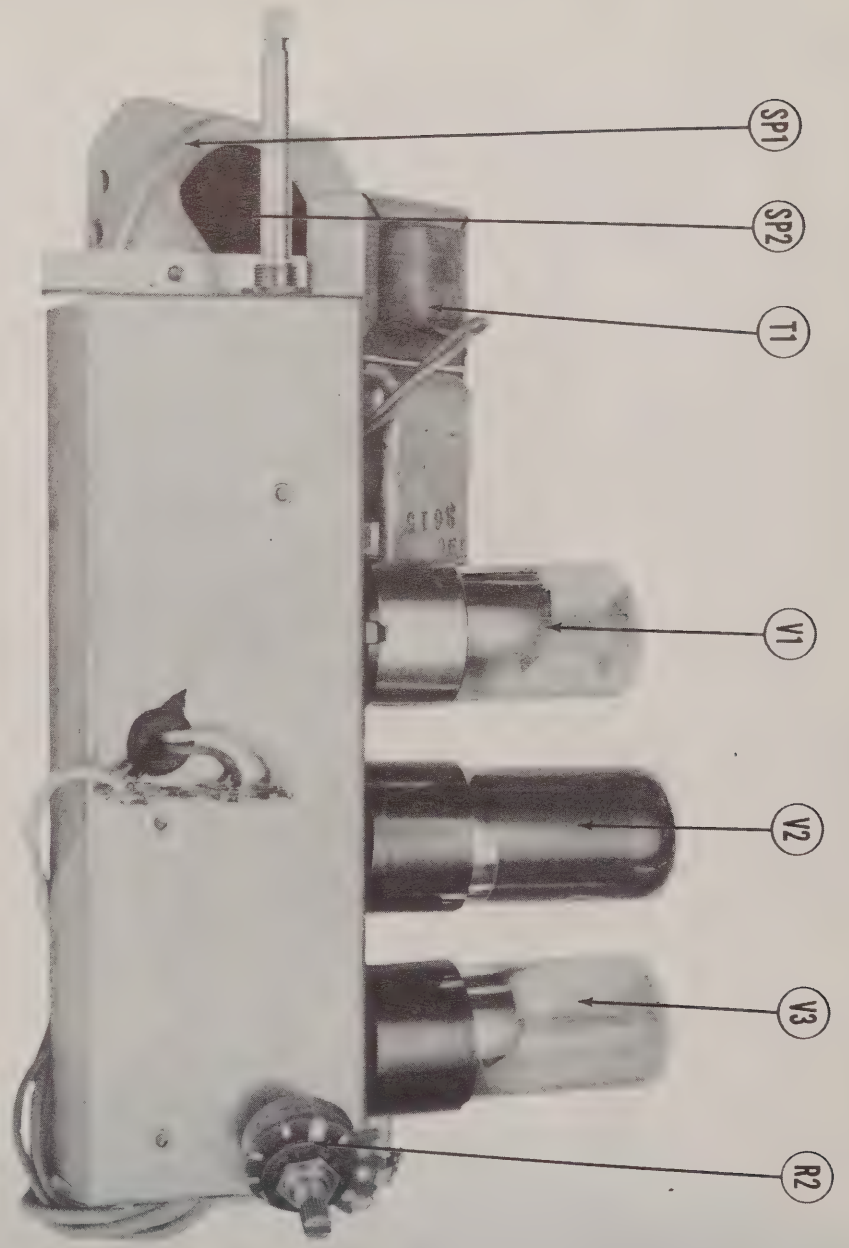
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2Meg	½	3611	Q13-139	AG-66-Z		Volume Control
B	Shaft		Not req.	Not req.	KSS-3		Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB		Attach to R1A per instructions
R2A	500KΩ	½	3648	Q13-133	AG-60-Z	BSK-60	Tone Control
B	Shaft		Not req.	Not req.	KSS-3	Not Req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	33KΩ	½	3982	BTS-33K	Series Phono - See Note
R4	470KΩ	½	3032	BTS-470K	Volume Control Shunt
R5	4.7Meg	½	2853	BTS-4.7Meg	AF Amp. Grid
R6A	250KΩ	½	3614 ♦	BTS-270K	AF Amp. Plate
B	500KΩ	½		BTS-470K	Output Grid
R7	150Ω	½	2854	BTS-150	Output Cathode
R8	4700Ω	½	2855	BTS-4700	Filter
R9	33Ω	½	2893		Surge Limiter
R10	150	5	2843	1 3/4A-150	Filament Dropping - Wire Wound

♦ Items R6A, R6B, C4A, C4B, and C3C are combined into one unit.
Note: Some models use 22KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	1.5KΩ	3Ω	130Ω	.3Ω		A-3865	A-2928 ①	R0-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3Ω	3615	46J6	46A1	
	CONE DIA.	V. C. DIA.				
SP2	4"X6"	9/16"				

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	3797	GC-AG-J	G-AG	WC36B	A56U	43	0-2 or S-2	

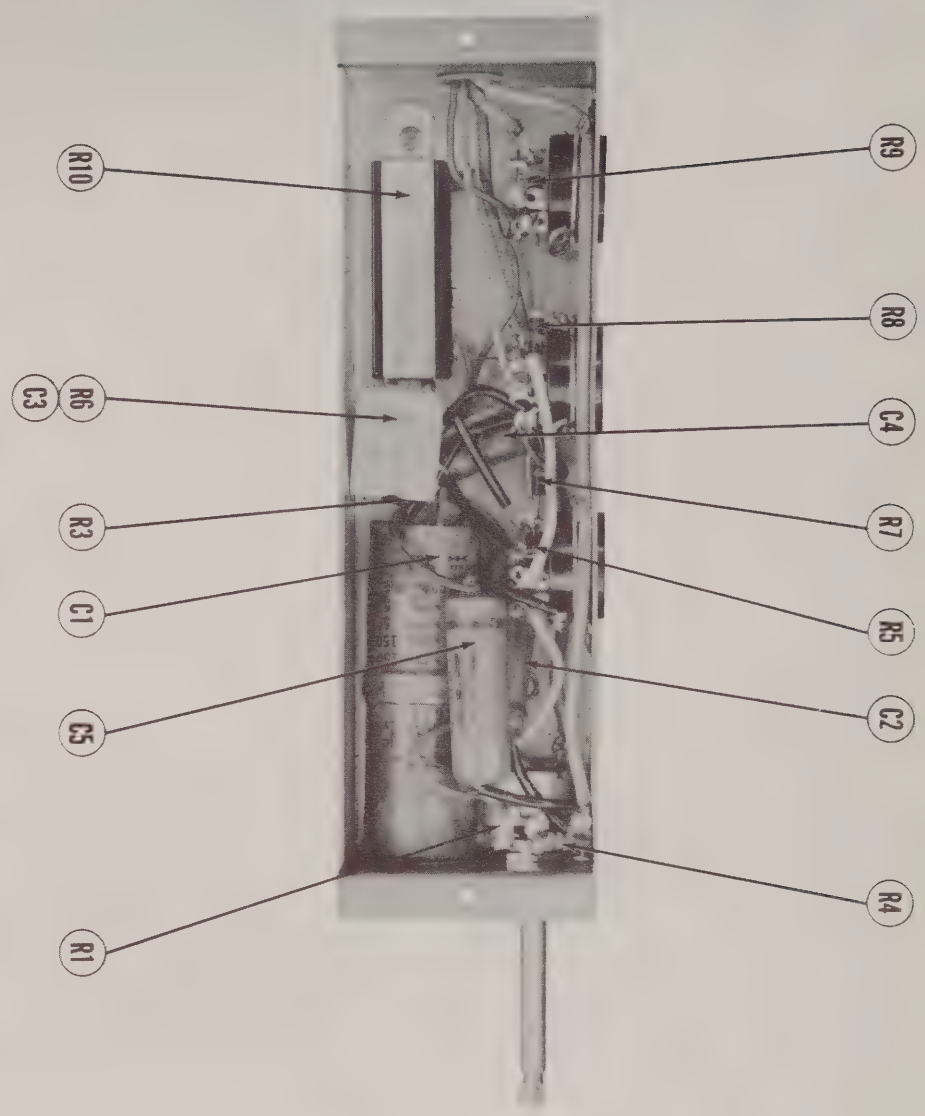
ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

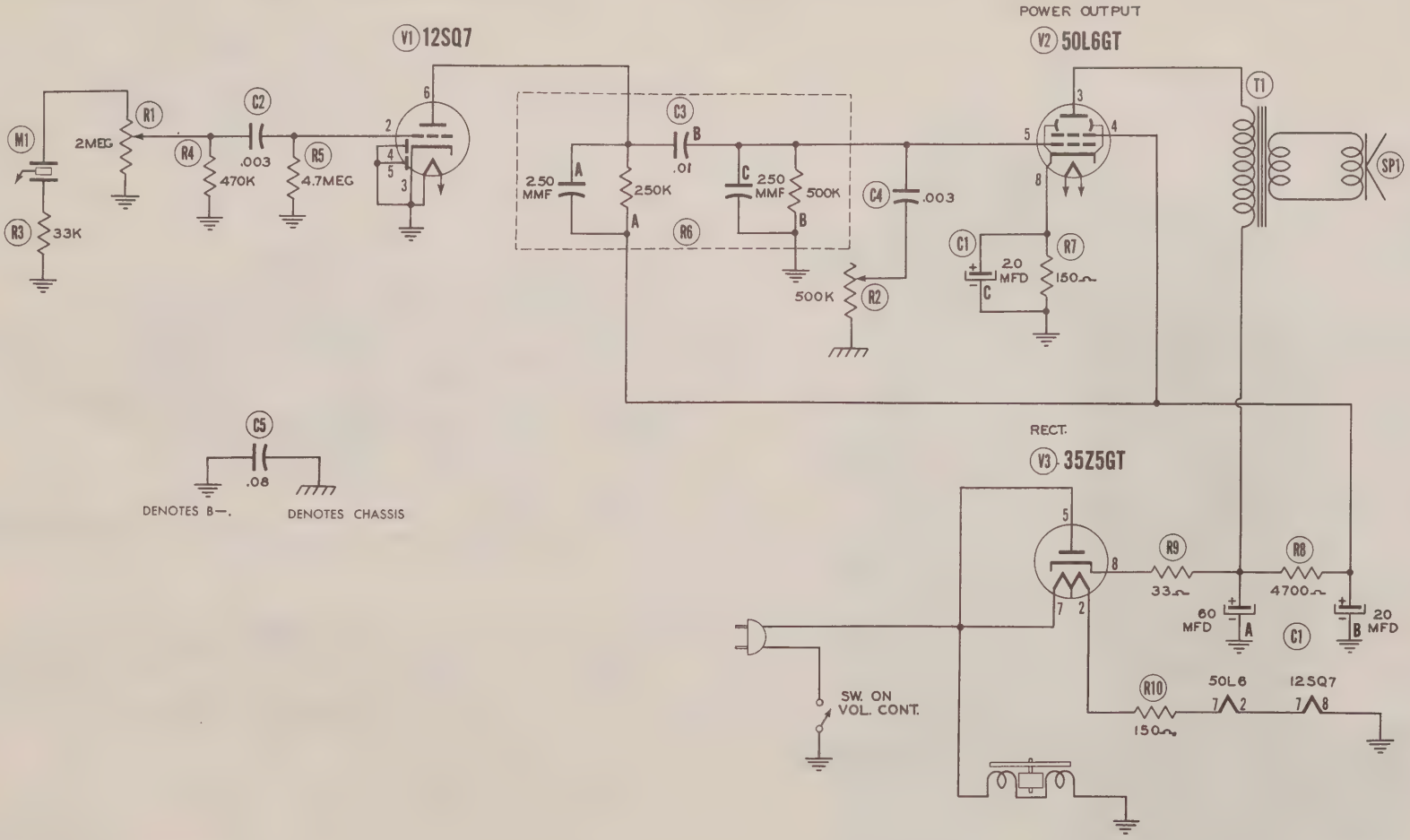
ITEM No.	REPLACEMENT DATA		REMARKS
	SILVERTONE PART No.	WALCO PART No.	
M2	3798	W-64AGA or W-64AGS	

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 237

SILVERTONE MODEL 237



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7GT	0V	-.6VDC	0V	0V	0V	70VDC	12VAC	0V
V 2	50L6GT	0V	12VAC	115VDC	105VDC	0V	0V	55VAC	6.9VDC
V 3	35Z5GT	120VDC	80VAC	90VAC	120VDC	117VAC	117VAC	117VAC	125VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7GT	Inf.	4.7Meg	0Ω	0Ω	0Ω	†255KΩ	14Ω	0Ω
V 2	50L6GT	Inf.	14Ω	†163Ω	†4.7KΩ	500KΩ	Inf.	65Ω	150Ω
V 3	35Z5GT	40KΩ	215Ω	228Ω	40KΩ	240Ω	240Ω	240Ω	40KΩ

† MEASURED FROM PIN 8 OF V3

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

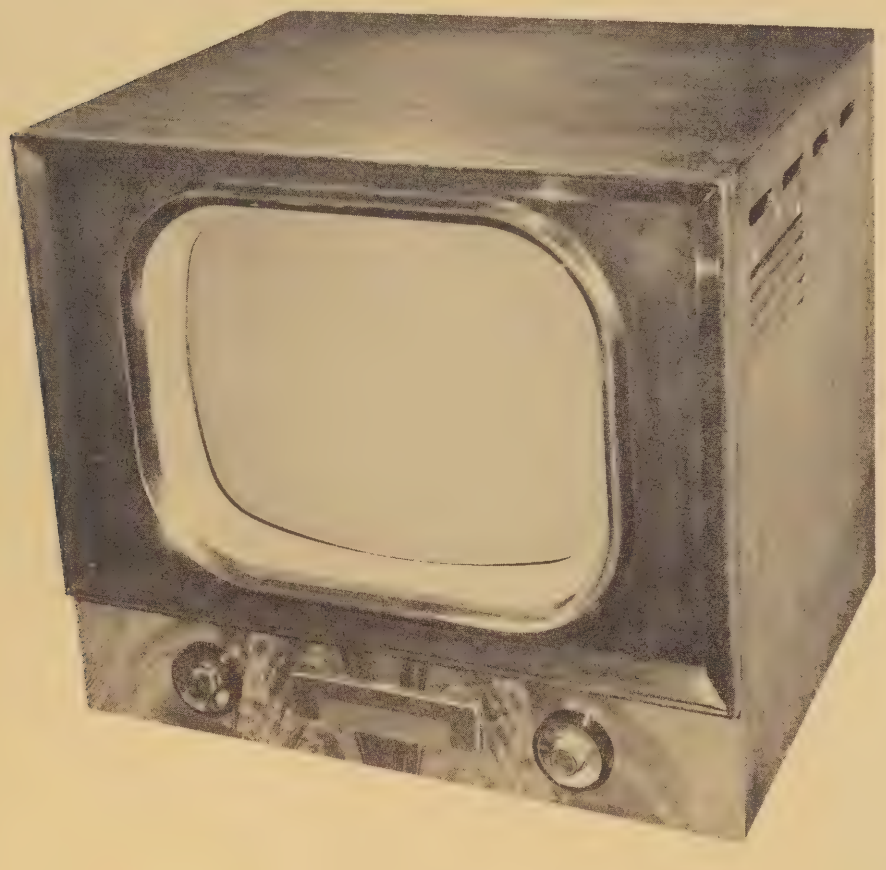
PHOTOFACT* Folder

TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL TV-365

TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

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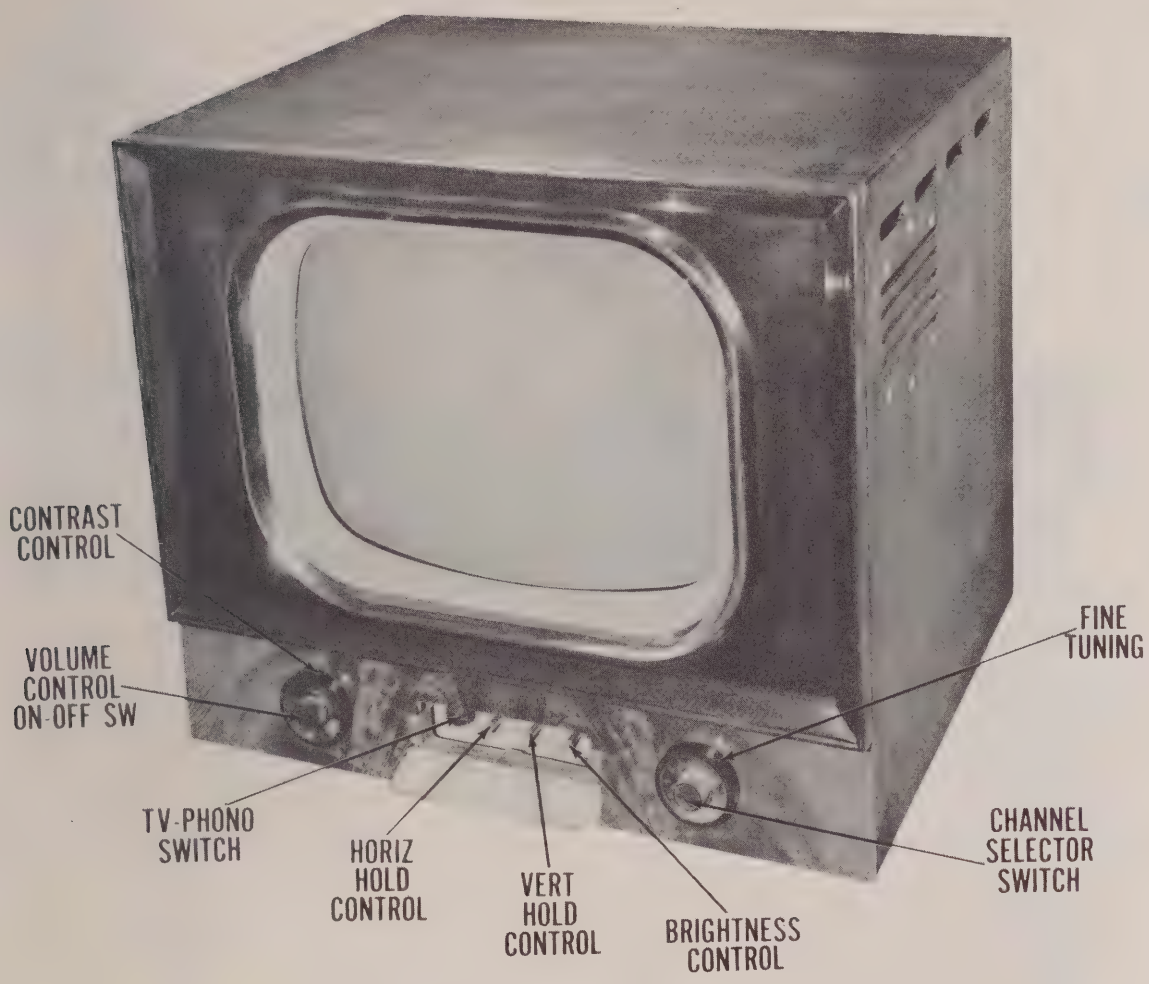
DATE 9-51 SET 145 FOLDER 11

TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365



TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

TELE-TONE MODEL TV365

TRADE NAME	Tele-Tone Models TV330, TV331, TV332, TV333 (Ch. TA0) TV355, TV357, TV360, TV365 (Ch. 8001, 2, 3)
MANUFACTURER	Tele-Tone Radio Corp., 540 West 58th Street New York, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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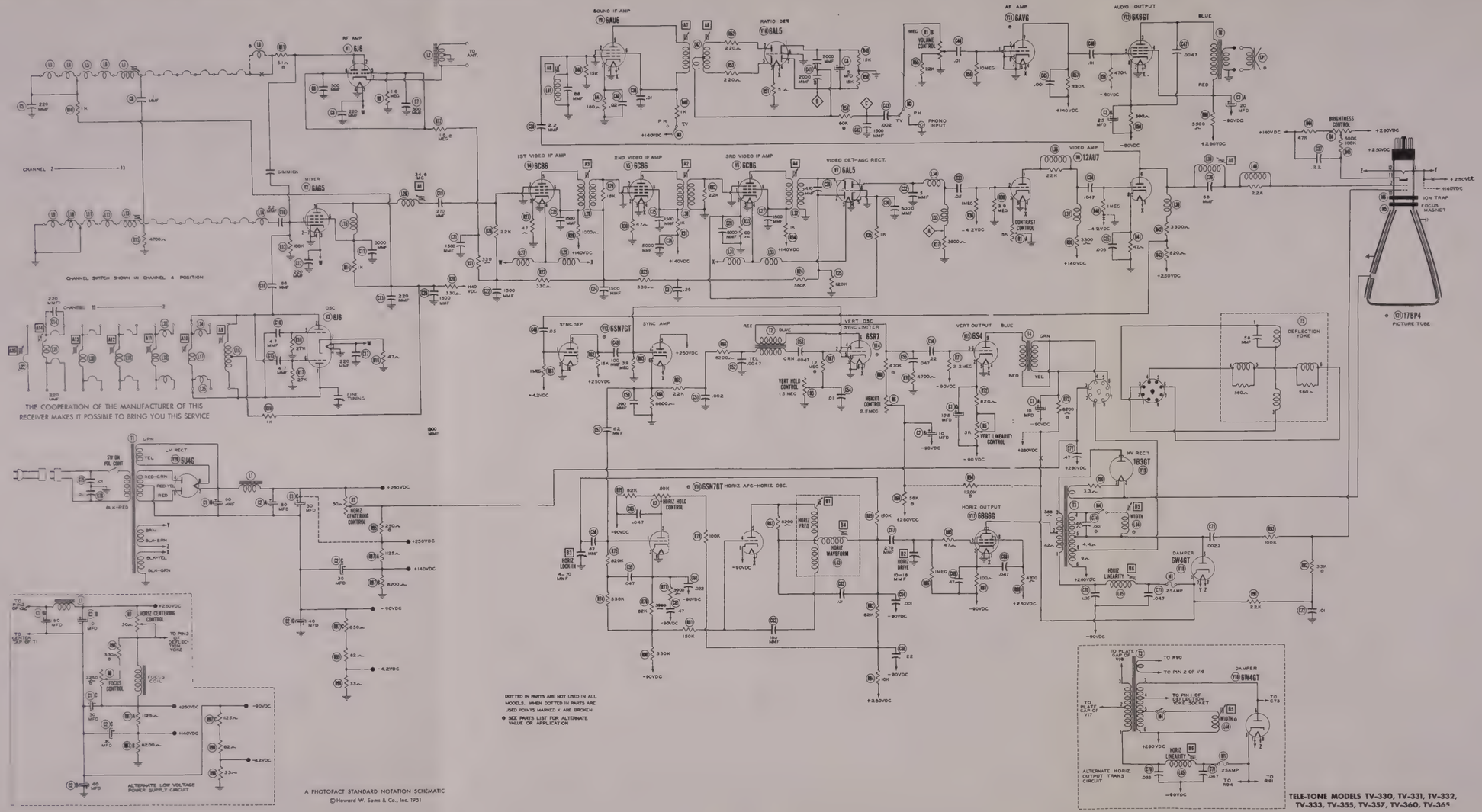
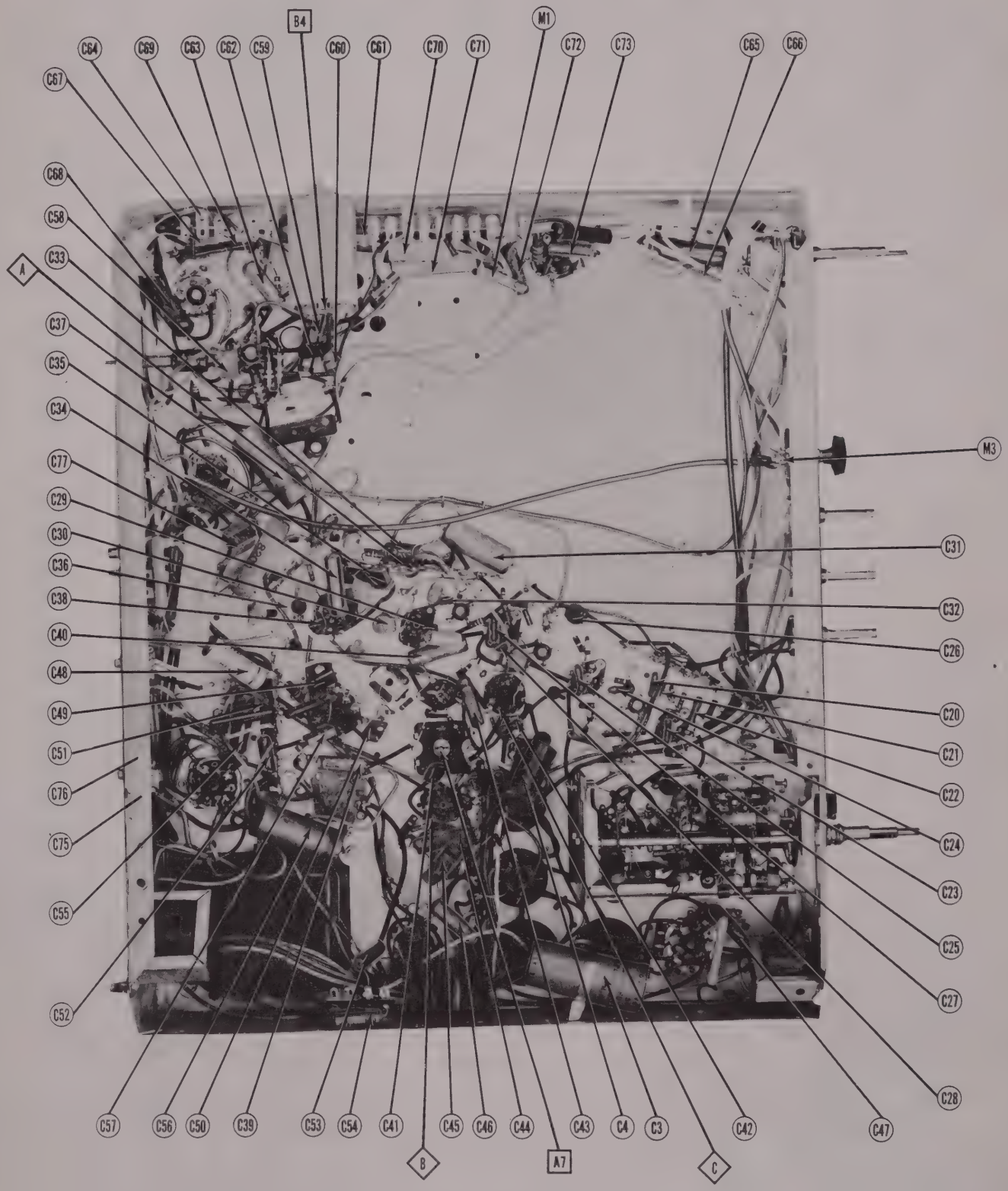


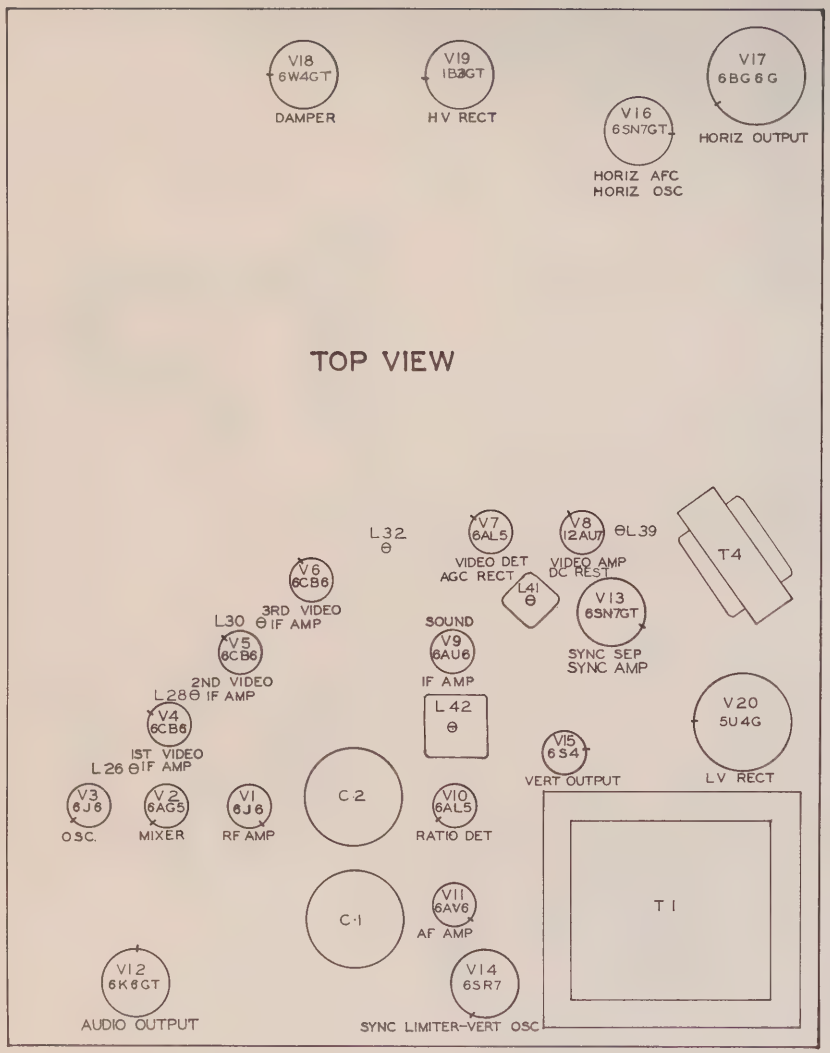
TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

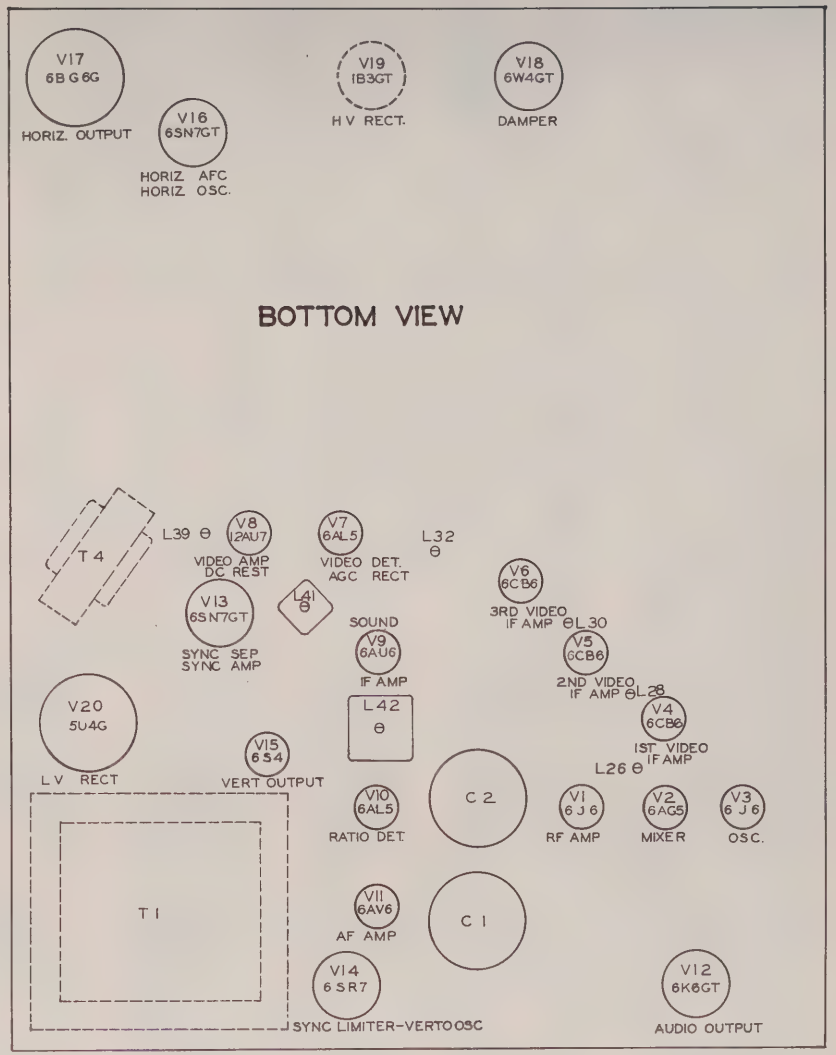
TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V16), from its socket.

VIDEO IF ALIGNMENT

Remove the local oscillator tube, (V3), from its socket to prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C31, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over mixer tube, (V2). Low side to chassis.	36.9MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	34.8MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over mixer tube, (V2). Low side to chassis.	35MC (10MC SWP)	32.8MC 37.3MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1, A2, A3, and A4 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD.	High side to pin 7, (Grid) of 12AU7, (V8). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any -	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A5	Adjust for MINIMUM 400% indication on scope After alignment is completed, connect an antenna and tune in a test pattern. Retouch A5 for maximum vertical wedge definition.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD.	High side to pin 7, (Grid) of 12AU7, (V8). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to Point (C). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD.	High side to pin 7, (Grid) of 12AU7, (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C4. Adjust for maximum amplitude and symmetry as per fig. 2.
6.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A8	Reconnect capacitor C4. Adjust A3 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and strightness of crossover lines.

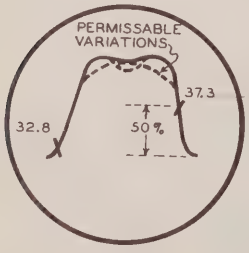


FIG. 1

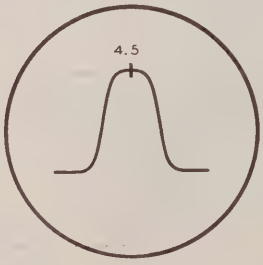


FIG. 2

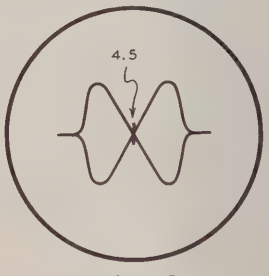


FIG. 3

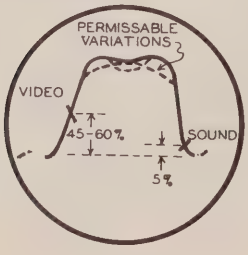
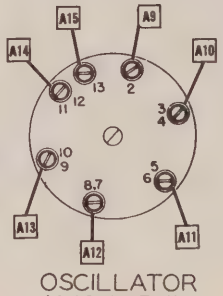


FIG. 4



OSCILLATOR ALIGNMENT POINTS

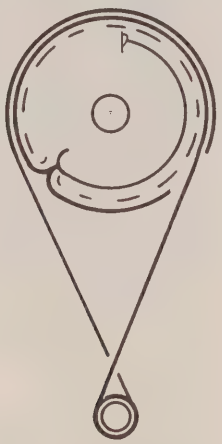
ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Replace the local oscillator tube, (V3), in its socket.
The oscillator coils for channels 3 thru 12 are paired with one variable and two fixed coils, therefore only the channels on which the receiver is to operate should be aligned. Since the channel 2 coil is parallel with all other oscillator coils, it is important that channel be aligned first. The order of alignment for the remaining channels is not important.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC SWP)	55.25MC 54.75MC	2	Vert. Amp. to Point (A). Low side to chassis.	A9	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
8.	"	"	63MC (10MC SWP) 69MC (10MC SWP)	61.25MC 65.75MC 67.25MC 71.75MC	3 or 4	"	A10	"
9.	"	"	79MC (10MC SWP) 85MC (10MC SWP)	77.25MC 81.75MC 83.25MC 87.75MC	5 or 6	"	A11	"
10.	"	"	177MC (10MC SWP) 183MC (10MC SWP)	175.25MC 179.75MC 181.25MC 185.75MC	7 or 8	"	A12	"
11.	"	"	189MC (10MC SWP) 195MC (10MC SWP)	187.25MC 191.75MC 183.25MC 197.75MC	9 or 10	"	A13	"
12.	"	"	201MC (10MC SWP) 207MC (10MC SWP)	199.25MC 203.75MC 205.25MC 209.75MC	11 or 12	"	A14	"
13.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	A15	"

THE RF AND MIXER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.



1 1/2 TURNS

COUNTER-CLOCKWISE

FINE TUNING DRIVE CORD STRINGING

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove ten wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Disconnect antenna terminal strip.
5. Disconnect speaker.
6. Remove four 3/8" hex head bolts from chassis. Remove chassis.
7. Remove two 1/4" hex nuts from speaker. Remove speaker.

NOTE: For picture tube removal it is necessary to remove the chassis as outlined above.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	100VDC	100VDC	6.3VAC	0V	-.4VDC	-.4VDC	0V		
V 2	6AG5	-2.8VDC	0V	6.3VAC	0V	115VDC	115VDC	0V		
V 3	6J6	100VDC	100VDC	6.3VAC	0V	§-1.7VDC	§-1.7VDC	.4VDC		
V 4	6CB6	-.2VDC	.6VDC	0V	6.3VAC	120VDC	120VDC	0V		
V 5	6CB6	-.1VDC	.6VDC	0V	6.3VAC	125VDC	125VDC	0V		
V 6	6CB6	0V	.8VDC	0V	6.3VAC	130VDC	130VDC	0V		
V 7	6AL5	0V	0V	6.3VAC	0V	.8VDC	0V	-.1VDC		
V 8	12AU7	135VDC	-.6VDC	1.1VDC	6.3VAC	6.3VAC	195VDC	-.6VDC	.6VDC	0V
V 9	6AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	1.5VDC		
V 10	6AL5	.2VDC	-.2VDC	1.2VAC	6.3VAC	0V	0V	0V		
V 11	6AV6	-.4VDC	0V	0V	6.3VAC	0V	0V	65VDC		
V 12	6K6GT	■360VDC	0V	■200VDC	■210VDC	■1.3VDC	■0V	6.3VAC	■15VDC	
V 13	6SN7GT	-4.8VDC	165VDC	0V	-25VDC	250VDC	3.2VDC	6.3VAC	0V	
V 14	6SR7	0V	§-13VDC §-20VDC	0V	-.5VDC	-.5VDC	36VDC	6.3VAC	0V	
V 15	6S4	0V	■28VDC	■0V	6.3VAC	0V	■0V	0V	0V	■530VDC
V 16	6SN7GT	■§-16VDC	■170VDC	■-3.8VDC	■§-60VDC	■200VDC	■0V	6.3VAC	0V	
V 17	6BG6G	0V	0V	■.3VDC	0V	■-4.9VDC	0V	6.3VAC	■295VDC	Top Cap *
V 18	6W4GT	500VDC	0V	500VDC	500VDC	260VDC	0V	¶0V	¶ 6.3VAC	
V 19	1B3GT	* DO NOT MEASURE								Top Cap *
V 20	5U4G	0V	275VDC	0V	270VAC	0V	270VAC	0V	275VDC	
V 21	17BP4	¶0V	195VDC	PIN 10 500VDC	PIN 11 155VDC 260VDC	PIN 12 ¶6.3VAC	H. V. CONNECTOR ** 12K. V.			

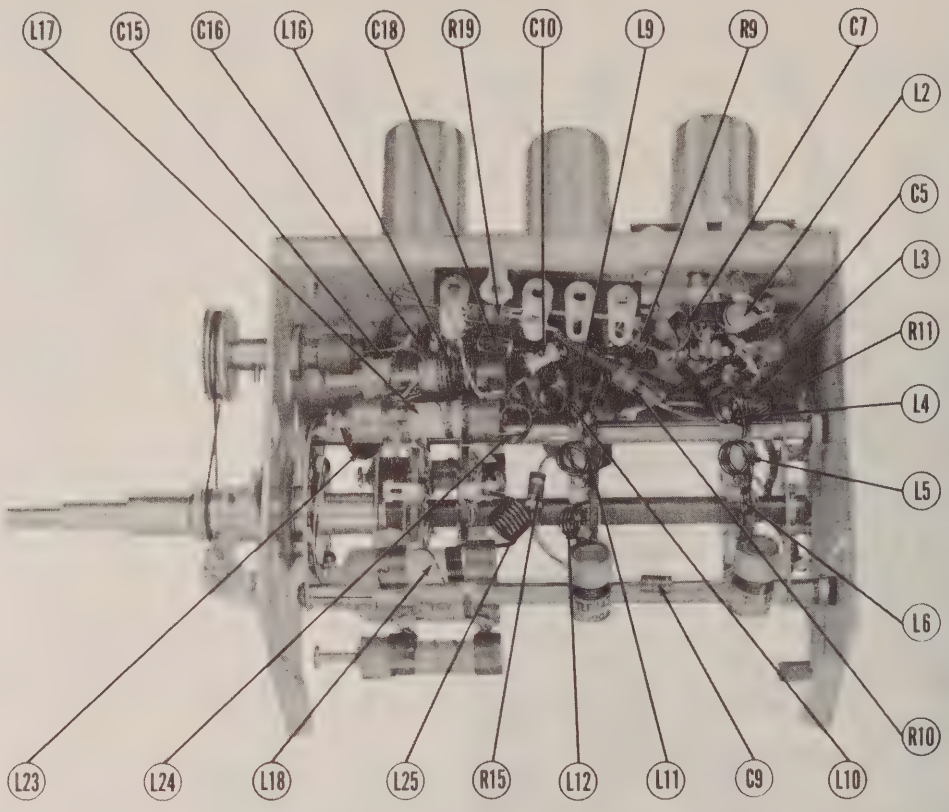
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
■ MEASURED FROM -90VDC LINE
¶ MEASURED FROM 250VDC LINE
* DO NOT MEASURE
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE
§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

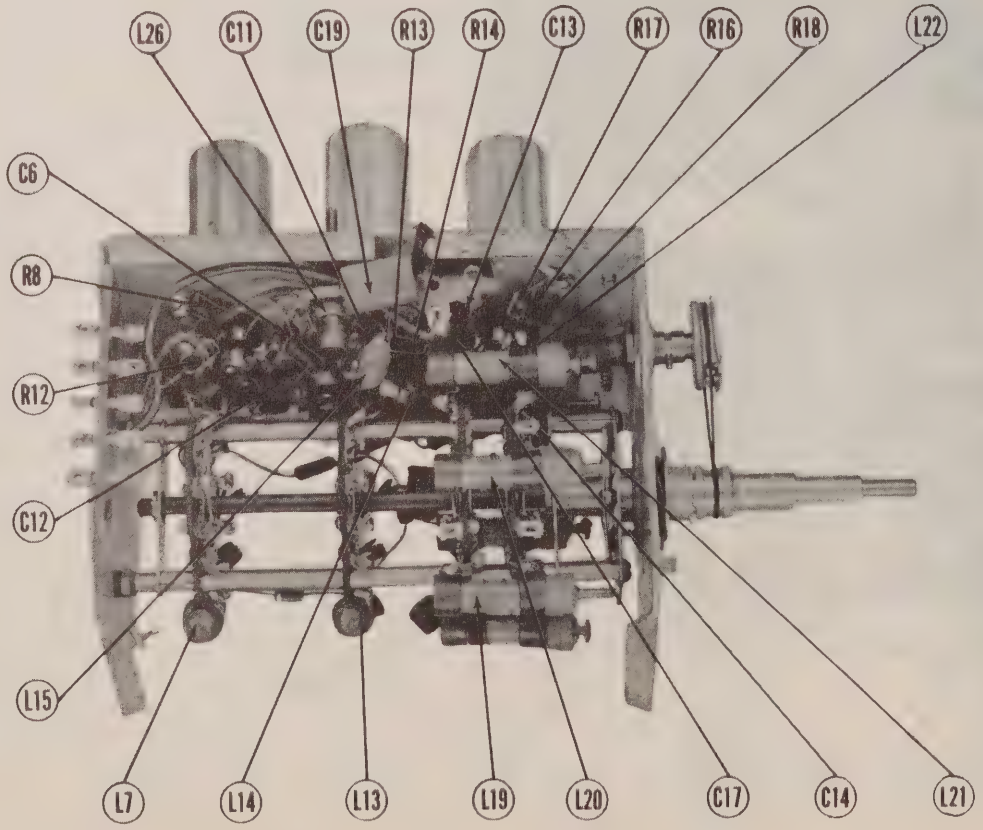
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†2.6KΩ	†2.6KΩ	.1Ω	0Ω	1.2Meg	1.2Meg	0Ω		
V 2	6AG5	100KΩ	0Ω	.1Ω	0Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 3	6J6	†2.6KΩ	†2.6KΩ	.1Ω	0Ω	27KΩ	27KΩ	47Ω		
V 4	6CB6	700KΩ	47Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 5	6CB6	680KΩ	47Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 6	6CB6	.3Ω	100Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 7	6AL5	.4Ω	120KΩ	.1Ω	0Ω	1.1KΩ	0Ω	3.9KΩ		
V 8	12AU7	†4.6KΩ	1Meg	5KΩ	.1Ω	.1Ω	†4.4KΩ	1Meg	47Ω	0Ω
V 9	6AU6	1.6Ω	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	180Ω		
V 10	6AL5	15KΩ	15KΩ	2.5Ω	.1Ω	Inf.	0Ω	Inf.		
V 11	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 12	6K6GT	†50Ω	0Ω	†4.2KΩ	†3.5KΩ	■470KΩ	■0Ω	.1Ω	■390Ω	
V 13	6SN7GT	1Meg	†15KΩ	0Ω	3.9Meg	†300Ω	6.8KΩ	.1Ω	0Ω	
V 14	6SR7	0Ω	2.7Meg 1.2Meg	0Ω	3.9Meg	3.9Meg	†3Meg †525KΩ	.1Ω	0Ω	
V 15	6S4	Inf.	■5.8KΩ ■820Ω	■2.2Meg	.1Ω	0Ω	■2.2Meg	Inf.	Inf.	#9.2KΩ
V 16	6SN7GT	■1.5Meg	†75KΩ	■410KΩ	■480KΩ	†95KΩ	■0Ω	.1Ω	0Ω	
V 17	6BG6G	Inf.	0Ω	■100Ω	Inf.	■1Meg	Inf.	.1Ω	†4.8KΩ	Top Cap #80Ω
V 18	6W4GT	#135KΩ	Inf.	360KΩ	#2.2KΩ	†62Ω	Inf.	¶0Ω	¶ .1Ω	
V 19	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #480Ω
V 20	5U4G	Inf.	8KΩ	Inf.	750Ω	Inf.	750Ω	Inf.	8KΩ	
V 21	17BP4	¶0Ω	†4.3KΩ	PIN 10 #55KΩ	PIN 11 †150KΩ ƒ †110KΩ	PIN 12 ¶.1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 2 OF V20
# MEASURED FROM PIN 3 OF V18
¶ MEASURED FROM 250VDC LINE
■ MEASURED FROM -90VDC LINE

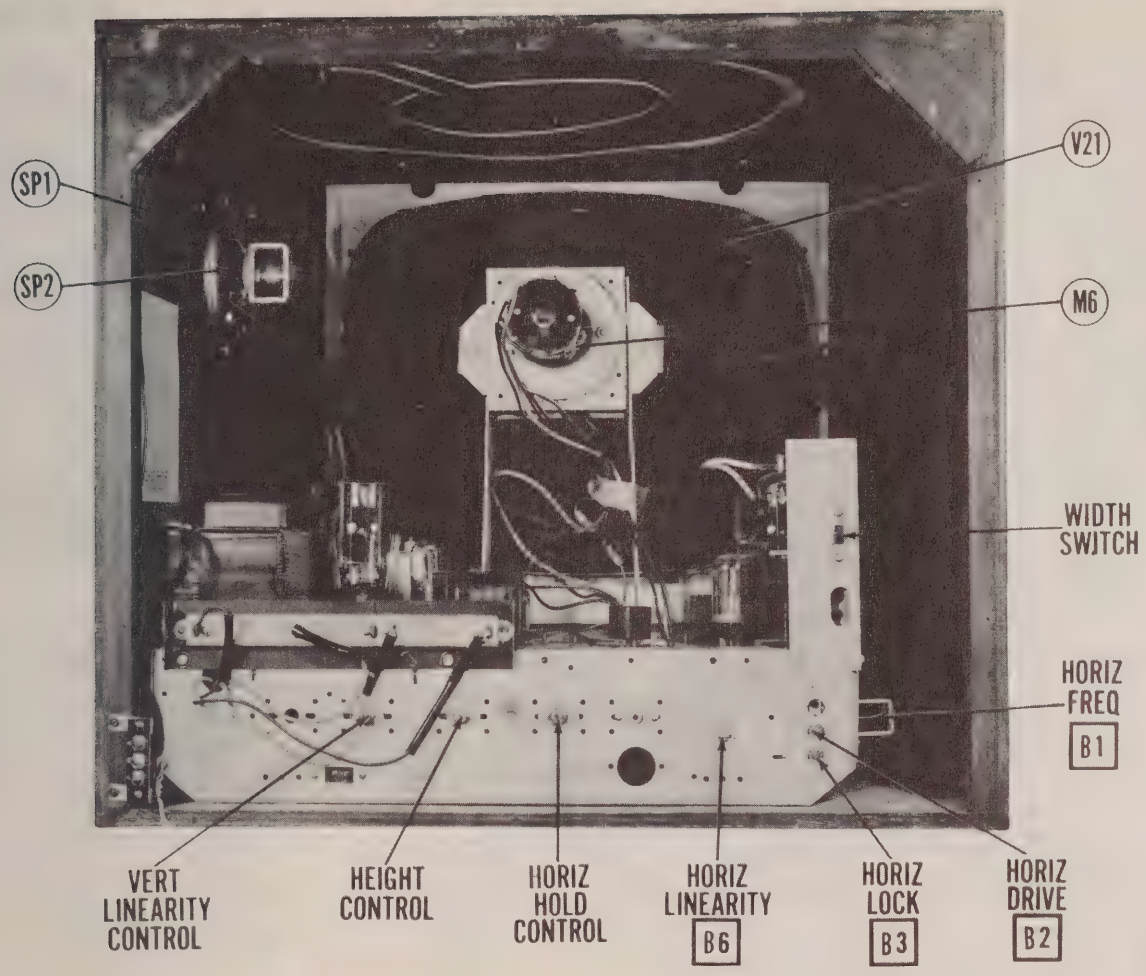
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Pre-set the horizontal lock trimmer, (B3), one turn counter-clockwise from tight and the horizontal drive trimmer, (B2), two turns counter-clockwise from tight.
Connect a short across terminals C and D of L43.
Turn the set on and tune in a TV station, preferably a test pattern.
Turn the horizontal hold control to fully clockwise.
Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.
Adjust the horizontal drive trimmer, (B2), clockwise just far enough to remove any bright vertical lines, or crowding in the picture.
If the picture falls out of synchronization readjust B1.
Turn the hold control to fully counter-clockwise and momentarily interrupt the signal by switching to another channel and back again.
Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture pulls into synchronization. There should be 7 to 9 bars present. If less than 7 bars are present, turn the horizontal lock trimmer, (B3), slightly counter-clockwise. If more than 9 bars are present turn B3 slightly clockwise, and repeat the check.
Remove the short from L43, and connect the vertical input lead of an oscilloscope through 22KΩ to terminal C of L43.
Turn the hold control to the mid-position of its range.
Adjust the horizontal phasing slug, (B4), until the broad and narrow peaks of the wave form on the scope are of equal height as shown in figure 5.
If necessary during adjustment of B4, adjust B1 to keep the picture synchronized.
Remove the oscilloscope and turn the hold control to maximum counter-clockwise and momentarily interrupt the signal.
Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture synchronizes. If less than $3\frac{1}{2}$ or more than $4\frac{1}{2}$ bars are present, adjust B3 slightly and repeat the check.
The picture should remain in synchronization over at least 3/4 of the hold control range.
Adjust the horizontal linearity slug, (B6), until the picture is symmetrical from left to right.
Since the horizontal drive trimmer effects both width and horizontal linearity, it may be necessary to retouch it for optimum results. However if the horizontal drive is changed a significant amount, recheck the horizontal oscillator alignment.

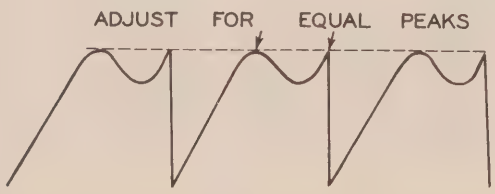


FIG. 5

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6J6	6J6	7BF	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st. Video IF Amp.	6CB6	6CB6	6CK	
V5	2nd. Video IF Amp.	6CB6	6CB6	6CK	
V6	3rd. Video IF Amp.	6CB6	6CB6	6CK	
V7	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amplifier	12AU7	12AU7	9A	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11A	AF Amplifier	6AV6	6AV6	7BT	
B	AF Amplifier	6AT6	6AT6	7BT	
V12	Audio Output	6K6GT	6K6GT	7S	
V13A	Sync. Separator-Sync. Amplifier	6SN7GT	6SN7GT	8BD	
B	Sync. Separator-Sync. Amplifier	7N7	7N7	7AC	
V14A	Sync. Limiter-Vert. Oscillator	6SR7	6SR7	8Q	
B	Sync. Limiter-Vert. Oscillator	6BF6	6BF6	7BT	
V15	Vertical Output	6S4	6S4	9AC	
V16A	Horizontal AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
B	Horiz. AFC-Horiz. Oscillator	7N7	7N7	7AC	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V21A	17BP4	17BP4A	17BP4		④ Space Permitting
B	16TP4	16TP4	16KP4 ④		⑤ Use single magnet ion trap
C	16RP4	16PP4	16KP4		
D	16TP4	16KP4 ⑤	16KP4 ⑤		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	10	475	TCE147-D	AF2X12761		UPT413		TVL-4811	▲ Vert. Amp. Decoup.
B	80	450		25B					■ Filter
C	30	400							▲ Filter
D	125	50							Vert. Amp. Cathode
C2A	80	450							▲ Filter
B	10	400	TCE148-D	AF16J216G		UPT412		TVL-4710	■ Vert. Osc. Dec.
C	30	300		8B					▲ Decoupling
D	40	150							Bias Filter
C3A	30	400	TCE154-D	PRS450/20-20		UP2045C		TVA-3716	Audio Output Decoupling
B	25	25							Audio Output Cathode
C4	5	250	TCE104-D	PRS150/4		BR425		TVA-1402	Stabilizing Cap.
C5	220		TCC221-7	SI220	D6-221		GP2K-221	5GA-T22	RF Amp. Decoupling
C6	500		TCC501-GM	SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Grid
C7	500		TCC501-GM	SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Grid
C8	220		TCC221-7	SI220	D6-221		GP2K-221	5GA-T22	RF Amp. Fil.
C9	1		TCC010-11		NP0K-010		NP0K-2R2		RF Coupling
C10	2.2		TCC22-12		TCZ-2.2		NP0K-2R2		RF Coupling
C11	5000		TCC502-SP	BPD-005	DD-502		811-005	5BK-D5	Mixer Decoupling
C12	220		TCC221-7	SI220	D6-221		GP2K-221	5GA-T22	Mixer Fil.
C13	220		TCC221-7	SI220	D6-221		GP2K-221	5GA-T22	RF Bypass
C14	220		TCC221-7	SI220	D6-221		GP2K-221	5GA-T22	RF Bypass
C15	4.7		TCC4.7-11				N750K-4R7		Osc. Feedback
C16	4.7		TCC4.7-11				N750K-4R7		Osc. Feedback
C17	220		TCC221-7	SI220	D6-221		GP2K-221	5GA-T22	Osc. Fil.
C18	.68		TCC068-8		TCZ-.68		NP0K-R68		Osc. Coupling
C19	270	500	TCM271-7	1469-0003	D6-270		GP2K-271	M3-33	IF Coupling
C20	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C21	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C22	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C23	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	1st. Video IF Dec.
C24	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C25	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Video IF Dec.
C26	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C27	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	3rd. Video IF Dec.
C28	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Cathode
C29	470		TCC471-10	SI470	D6-471	5R5T5	GP2K-471	5GA-T47	IF Coupling
C30	5000		TCC502-SP	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C31	.25	200	TCP254-1	P488-25		GT2P25		2TM-P25	AGC Filter
C32	5	500	TCC050-8	1469-000005		5R5V5	NP0K-050	M5-55	Video Det. Filter
C33	.05	200	TCPM503-1	P288-05	DF-503	PTE4S5		2TM-S5	Video Coupling
C34	.047	400	TCPM503-4	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C35	.005	400	TCP502-4	P688-005	D6-502	PTE6D5	GP2-333-502	4TM-D5	Video Amp. Cathode
C36	68			SI68	D6-681	5R5Q7	GP1K-680	5GA-T68	Fixed Trimmer
C37	.22	400	TCPM254-4	P488-22		GT4P25		4TM-P22	Picture Tube Cathode
C38	2.2		TCC2.2-7		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C39	.01	400	TCP103-4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sound IF Decoupling
C40	.02	200	TCP203-1	P488-02	DF-203	PTE4S2		2TM-S2	Sound IF Cathode
C41A	2000		TCC2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	Diode Load Cap.
B	2000					1W5D2			Diode Load Cap.
C42	1500		TCC152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	De-emphasis
C43	.002	600	TCP202-10	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C44	.01	400	TCP103-4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C45	.001	600	TCP102-10	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AF Amp. Plate
C46	.01	400	TCP103-4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C47	.0047	600	TCPM502-10	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate
C48	.05	400	TCPM503-4	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C49	100	500	TCM101-8	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Sync. Coupling
C50	390	500	TCM391-7	1469-0004	D6-391	5R5T4	GP2K-391	M5-34	Sync. Sep. Cathode
C51	.002	600	TCPM202-10	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Integrator Net.
C52	.0047	600	TCPM502-10	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Integrator Net.
C53	.0047	600	TCPM502-11-SP	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Vert. Sync. Coupling
C54	.01	600	TCPM103-10	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Osc. Grid
C55	.047	600	TCPM503-10	P688-047	DF-503	PTE6S5		6TM-S47	Vert. Discharge
C56	.22	600	TCPM-254-10	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C57	82	500	TCM082-8	1469-0001		5R5T1	GP1K-820	M5-31	Horiz. Sync. Coupling
C58	82	500	TCM082-8	1469-0001		5R5T1	GP1K-820	M5-31	Horiz. Feedback
C59	.047	400	TCPM503-4	P488-047	DF-503	PTE4S5		4TM-S47	AFC Filter
C60	.022	400	TCPM203-4	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C61	.47	200	TCPM-474-1	P288-47		GT2P5		2TM-P47	AFC Filter
C62	180	1000	TCSM181-29						Horiz. Osc. Grid
C63	.01	600	TCPM103-10	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C64	.001	1000	TCPM102-14-SP	P1088-001		PTE16D1		MB-D1	Horiz. Discharge
C65	.047	600	TCPM503-10	P688-047	DF-503	PTE6S5		6TM-S47	AFC Plate
C66	.22	400	TCPM-254-10	P488-22		GT4P25		4TM-P22	Horiz. Osc. Decoupling
C67	270	500	TCM271-7	1469-0003	D6-271	5R5T3	GP2K-271		Horiz. Sweep Coupling
C68	.047	600	TCPM503-11	P688-047	DF-503	PTE6S5		6TM- S47	Horiz. Output Screen
C69	.47	200	TCPM474-1	P288-47		GT2P5		2TM-P47	Horiz. Output Cathode
C70	.035	1000	TCP353-13	P1088-033					Damper Filter
C71	.047	1000	TCP503-13	P1088-47		GT1685		MB-S5	Damper Filter
C72	.01	600	TCPM103-10	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Accelgrating Anode Dec.
C73	.0022	600	TCPM202-10	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Damper Plate
C74	.001	1000	TCPM102-14-SP	P1088-001		PTE16D1		MB-D1	Fixed Trimmer *
C75	.01	400	TCPM103-4-SP	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C76	.01	400	TCPM103-4-SP	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Line Filter
C77	.47	200	TCPM474-1	P288-47	GT2P5			2TM-P47	Horiz. Cent. Cont. Bypass

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	TVC-538D	Concentrikit B17-114 ♯	RTV-291		Contrast Control - Front
B	1Meg	½		B13-137K ♯			Volume Control - Tapped at 250KΩ - Rear
C	Shaft end			E-187 ♯			Attach per instructions in Concentrikit
D	Switch			76-1 ♯			Attach per instructions in Concentrikit
R2A	50KΩ	½	TVC-540D	QU-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R2A per instructions
R3A	1.5Meg	½	TVC-541D	QU-138	AG-83-S	AN-75	Vert. Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R3A per instructions
R4A	500KΩ	½	TVC-539D	QU-133	AG-58-S	AN-59	Brightness Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R4A per instructions
R5A	5000Ω	½	TVC-503-1D	QU-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2.5Meg	½	TVC-504-1D	QU-239	AG-84-S	AN-83	Height Control
B	Shaft		Not req.	RQ	FKS-1/4	AK-1	Attach to R6A per instructions
R7	50Ω	2	TVC-542D	W-50 ♯	43-50 ♯	VK-116	Horiz. Centering Control - Wire Wound
R8	2250	4	TVC-506-1D		RTV-9	SVS-926	Focus Control - Wire Wound - See Note 1

♯ Additional parts to be used with Concentrikit.
♯ Fashion shaft to Duplicate original
Note 1 Some models use Magnet in place of Focus Coil thus omitting Focus Control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	1.8Meg 20%	½			RF Amp. Grid
R10	1000Ω 20%	½		BTS-1000	RF Amp. Decoupling
R11	3.3Ω	½			Parasitic Suppressor - See Note 3
R12	1.8Meg 20%	½		BTS-1.8Meg	AGC Network
R13	100KΩ	½			Mixer Grid
R14	1000Ω 20%	½		BTS-1000	Mixer Decoupling
R15	4700Ω	½		BTS-4700	Mixer Grid Coil Shunt
R16	27KΩ	½		BTS-27K	Osc. Grid
R17	27KΩ	½		BTS-27K	Osc. Grid
R18	47Ω 20%	½			Osc. Cathode
R19	1000Ω 20%	½		BTS-1000	Osc. Decoupling
R20	330Ω 20%	½	TRC-330-1	BTS-330	Decoupling
R21	330Ω 20%	1	TRC-330-1	BTS-330	AGC Network
R22	330Ω 20%	½	TRC-330-1	BTS-330	AGC Network
R23	330Ω 20%	½	TRC-330-1	BTS-330	AGC Network
R24	560KΩ 20%	½	TRC-564-1	BTS-560K	AGC Network
R25	120KΩ 20%	½	TRC-124-1	BTS-120K	AGC Network
R26	22KΩ 20%	½	TRC-223-1		1st. Video IF Amp. Grid
R27	47Ω	½	TRC-470-2		1st. Video IF Amp. Cathode
R28	1000Ω	½	TRC-102-2	BTS-1000	1st. Video IF Amp. Decoupling
R29	18KΩ	½	TRC-183-2		2nd. Video IF Transformer Shunt
R30	47Ω	½	TRC-470-2		2nd. Video IF Amp. Cathode
R31	1000Ω	½	TRC-102-2	BTS-1000	2nd. Video IF Amp. Decoupling
R32	22KΩ 20%	½	TRC-223-1		3rd. Video IF Transformer Shunt
R33	100Ω	½	TRC-101-2	BTS-100	3rd. Video IF Amp. Cathode
R34	1000Ω 20%	½	TRC-102-1	BTS-1000	3rd. Video IF Amp. Decoupling
R35	100Ω 20%	½	TRC-101-1	BTS-1000	Bias Network
R36	1Meg	½	TRC-105-2	BTS-1Meg	Bias Network
R37	3900Ω	½	TRC-392-2	BTS-3900	Video Det. Diode Load
R38	3.9Meg 20%	½	TRC-395-1	BTS-3.9Meg	Video Amp. Grid
R39	3300Ω	1	TRC-332-5	BTA-3300	Video Amp. Plate
R40	1Meg 20%	½	TRC-105-1	BTS-1Meg	Video Amp. Grid
R41	47Ω 20%	½	TRC-470-1		Video Amp. Cathode
R42	3300Ω	1	TRC-332-5	BTA-3300	Video Amp. Plate
R43	820Ω	½	TRC-821-2	BTS-820	Video Amp. Decoupling
R44	47KΩ 20%	½	TRC-473-1	BTS-47K	Voltage Divider
R45	100KΩ 20%	½	TRC-104-1	BTS-100K	Picture Tube Cathode
R46	15KΩ	½	TRC-153-2	BTS-15K	Sound IF Amp. Grid
R47	180Ω	½	TRC-181-2	BTS-180	Sound IF Amp. Cathode
R48	1000Ω	½	TRC-102-2	BTS-1000	Sound IF Amp. Decoupling
R49	15KΩ	½	TRC-153-2	BTS-15K	Ratio Det Diode Load
R50	15KΩ	½	TRC-153-2	BTS-15K	Ratio Det Diode Load
R51	5.1Ω	½	TRC-5.1-A-1	BW-½-5.1	Ratio Det Diode Filament - Wire Wound
R52	220Ω	½	TRC-221-2	BTS-220	Balancing
R53	220Ω	½	TRC-221-2	BTS-220	Balancing
R54	60KΩ	½		BTS-56K	De-emphasis - See Note 4

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R55	22KΩ 20%	½	TRC-223-1	BTS-22K	Tone Compensation
R66	10Meg 20%	½	TRC-106-1	BTS-10Meg	AF Amp. Grid
R57	330KΩ 20%	½	TRC-334-1	BTS-330K	AF Amp. Plate
R58	470KΩ	½	TRC-474-2	BTS-470K	Output Grid
R59	390Ω	1	TRC-391-5	BTA-390	Output Cathode
R60	3500Ω	5	TRP-24	1 3/4A-3500	Output Decoupling - Wire Wound
R61	1Meg	½	TRC-105-2	BTS-1Meg	Sync. Sep. Grid
R62	15KΩ	1	TRC-153-5	BTA-15K	Sync. Sep. Plate
R63	3.9Meg	½	TRC-395-2	BTS-3.9Meg	Sync. Sep. Grid
R63	6800Ω	½	TRC-682-2	BTS-6800	Sync. Sep. Cathode
R65	22KΩ	½	TRC-223-2	BTS-22K	Integrator
R66	8200Ω	½	TRC-822-2	BTS-8200	Integrator
R67	1.2Meg	½	TRC-125-2	BTS-1.2Meg	Vert. Osc. Grid - See Note 5
R68	470KΩ 20%	½	TRC-474-1	BTS-470K	Vert. Osc. Plate - See Note 6
R69	56KΩ	½	TRC-563-2	BTS-56K	Vert. Osc. Decoupling - See Note 7
R70	4700Ω	½	TRC-472-2	BTS-4700	Vert. Peaking
R71	2.2Meg	½	TRC-225-2	BTS-2.2Meg	Vert. Amp. Grid
R72	820Ω	½	TRC-821-2	BTS-820	Vert. Amp. Cathode
R73	8200Ω	5	TRP-36	1 3/4A-8000	Vert. Amp. Decoupling - See Note 8
R74	330KΩ	½	TRC-334-2	BTS-330K	Horiz. AFC Grid
R75	820KΩ	½	TRC-824-2	BTS-820K	Horiz. AFC Grid
R76	82KΩ 5%	½	TRC-823-6	BTA-82K-5%	Horiz. AFC Cathode
R77	3900Ω	½	TRC-392-2	BTS-3900	Horiz. AFC Filter
R78	100KΩ	1	TRC-104-5	BTA-100K	Horiz. AFC Plate
R79	82KΩ	1	TRC-823-5	BTA-82K	Voltage Divider
R80	330KΩ 5%	1	TRC-334-6	BTA-330K-5%	Bias Network
R81	150KΩ 5%	1	TRC-154-6	BTA-150K-5%	Horiz. Osc. Grid
R82	82KΩ	1	TRC-823-5	BTA-82K	Horiz. Osc. Plate
R83	8200Ω 5%	½	TRC-822-3	BTS-8200-5%	Horiz. Osc. Coil Shunt
R84	10KΩ	½	TRC-103-2	BTS-10K	Decoupling
R85	47Ω 20%	½	TRC-470-1		Parasitic Suppressor
R86	1Meg	½	TRC-105-2	BTS-1Meg	Horiz. Output Grid
R87	100Ω	2	TRC-101-8	BW-2-100	Horiz. Output Cathode - Wire Wound
R88	4700Ω	2	TRC-472-7	BW-2-4700	Horiz. Output Screen - Wire Wound
R89	150KΩ	½	TRC-154-2	BTS-150K	Horiz. Feedback
R90	3.3Ω	10	TRC-3.3-A-1		HV Rectifier Filament
R91	22KΩ 20%	½	TRC-223-1	BTS-22K	Decoupling
R92	33KΩ	1	TRC-333-5	BTA-33K	Acc Anode Load - See Note 4
R93	100KΩ 20%	2	TRC-104-7	BTB-100K	Voltage Divider
R94	120KΩ	½	TRC-124-2	BTS-120K	Voltage Divider - See Note 2
R95	250Ω	10		1 3/4A-250	Filter - Wire Wound - See Note 2
R96	330Ω	2	TRC-331-7	BTB-330	Focus Coil Shunt - See Note 2
R97A	1125Ω	10	TRP-17-DA		Voltage Divider - Wire Wound
B	8200Ω	3			Voltage Divider - Wire Wound
C	650Ω	10			Voltage Divider - Wire Wound
R98	33Ω	1	TRC-330-5	BW-1-33	Voltage Divider - Wire Wound
R99	82Ω	2	TRC-820-8	BW-2-82	Voltage Divider - Wire Wound

Note 2 Not used in all models.
Note 3 Some models use 5.1Ω resistor in this application.
Note 4 Some models use 47KΩ resistor in this application.
Note 5 Some models use 1Meg resistor in this application.
Note 6 Some models use 1.5Meg resistor in this application.
Note 7 Some models use 120KΩ resistor in this application.
Note 8 Some models use 1000Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ④ 2.2A	720VCT .250ADC	④ 3A	6.3VAC 1.2A SEC. 4 6.3VAC ④ 7A	TTR-188-D	P8159 and P5014	P-3067	TP360

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	145Ω	1360Ω	TTR161-2D	A-8111	A-3000	TBO-1	Vert. Block Osc. Trans
T3	430Ω	18Ω	TTR209-D		HVO-6		Horiz. Output Trans.
	Tap 42Ω	Taps 9Ω and 13.4Ω					
T4	1100Ω	10Ω	TTR185-D	A-8112	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	11Ω		TTR223-D				Horiz. Deflection Coils.
B	63Ω						vert. Deflection Coils

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	5KΩ	4.2Ω	390Ω	.4Ω	TTR179-D	A-3877	A-2930	RO-8 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1A	PM	4Ω	TSP466-D ②	5J4	5A15	②Used in models TV357, 365, and 330
B	PM	4Ω	TSP464- ②	46J6	46A1	③Used in models TV325, 331, 333, 33, and
C	PM		TSP465-D ③	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2 A	5"	9/16"				
B	4X6"	9/16"				
C	10"	9/16"				

TELE-TONE MODELS TV-330, TV-331, TV-332, TV-333, TV-355, TV-357, TV-360, TV-365

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	37Ω	1Henry	TTR-106-2D	C-2326 ①	C-2996 ①	TR-3300 ①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TELE-TONE PART No.	MEISSNER PART No.	
L2	Ant. Matching Trans.	0Ω		TLF365-D		
L3	Ant. Coil	0Ω		TLF128-D		Channel #2
L4	Ant. Coil	0Ω		TLF129-D		Channel #3
L5	Ant. Coil	0Ω		TLF129-D		Channel #4
L6	Ant. Coil	0Ω		TLF130-D		Channel #5
L7	Ant. Coil	0Ω		TLF143-D		Channel #6
L8	Ant. Coil	0Ω		TLF138-D		
L9	Mixer Grid Coil	0Ω		TLF128-D		Channel #2
L10	Mixer Grid Coil	0Ω		TLF129-D		Channel #3
L11	Mixer Grid Coil	0Ω		TLF129-D		Channel #4
L12	Mixer Grid Coil	0Ω		TLF130-D		Channel #5
L13	Mixer Grid Coil	0Ω		TLF143-D		Channel #6
L14	Mixer Grid Coil	0Ω		TLF138-D		
L15	RF Choke	2.7Ω		TLF146-D		
L16	Osc. Coil	0Ω		TLF120-1		Channel #2
L17	Osc. Coil	0Ω		TLF120-3		Channel #3 and 4
L18	Osc. Coil	0Ω		TLF120-5		Channel #5 and 6
L19	Osc. Coil	0Ω		TLF120-6		Channel #7 and 8
L20	Osc. Coil	0Ω		TLF120-9		Channel # 9 and 10
L21	Osc. Coil	0Ω		TLF120-10		Channel #11 and 12
L22	Osc. Coil	0Ω		TLF120-10		Channel #13
L23	Incremental coil	0Ω		TLF542-D		
L24	Incremental Coil	0Ω		TLF542-D		
L25	Incremental Coil	0Ω		TLF541-D		
L26	1st. Video IF	.8Ω		TLF551-D		
L27	Fil. Choke	0Ω		TLF520-D		
L28	2nd. Video IF	.4Ω	.4Ω	TLF567-D		
L29	Fil. Choke	0Ω		TLF520-D		
L30	3rd. Video IF	.3Ω	.3Ω	TLF568-D		
L31	Fil. Choke	0Ω		TLF520-D		
L32	4th. Video IF	.4Ω	.4Ω	TLF567-10		
L33	Fil. Choke	0Ω		TLF520-D		
L34	RF Choke	2.8Ω		TLF146-D		15 Microhenries
L35	Peaking	6.5Ω		TLF135-D	19-1921	180 Microhenries (Orange and Purple Dot)
L36	Peaking	6.5Ω		TLF135-D	19-1921 †	180 Microhenries Wound on 22KΩ Resistor
L37	Peaking	6.5Ω		TLF135-D	19-1921	180 Microhenries (Orange and Purple Dot)
L38	Peaking	8Ω		TLF562-D	19-1923	350 Microhenries (Red Dot)
L39	4.5MCTrap	1.3Ω		TLF570-D		
L40	Peaking	5Ω		TLF502-D	19-1921 †	120 Microhenries wound on 22KΩ resistor
L41	Sound IF	1.6Ω		TLF114-D		
L42	Ratio Det. Trans.	6.1Ω	.6Ω	TLF582		Tap.6Ω
L43	Horiz. Osc.	(A-C)34Ω	(C-F)60Ω	TLF566-D		(C-D)40Ω
L44	Width Coil	28Ω		TLF553-D		Not used in all models
L45	Horiz. Lin.	36Ω		TLF506-DA		

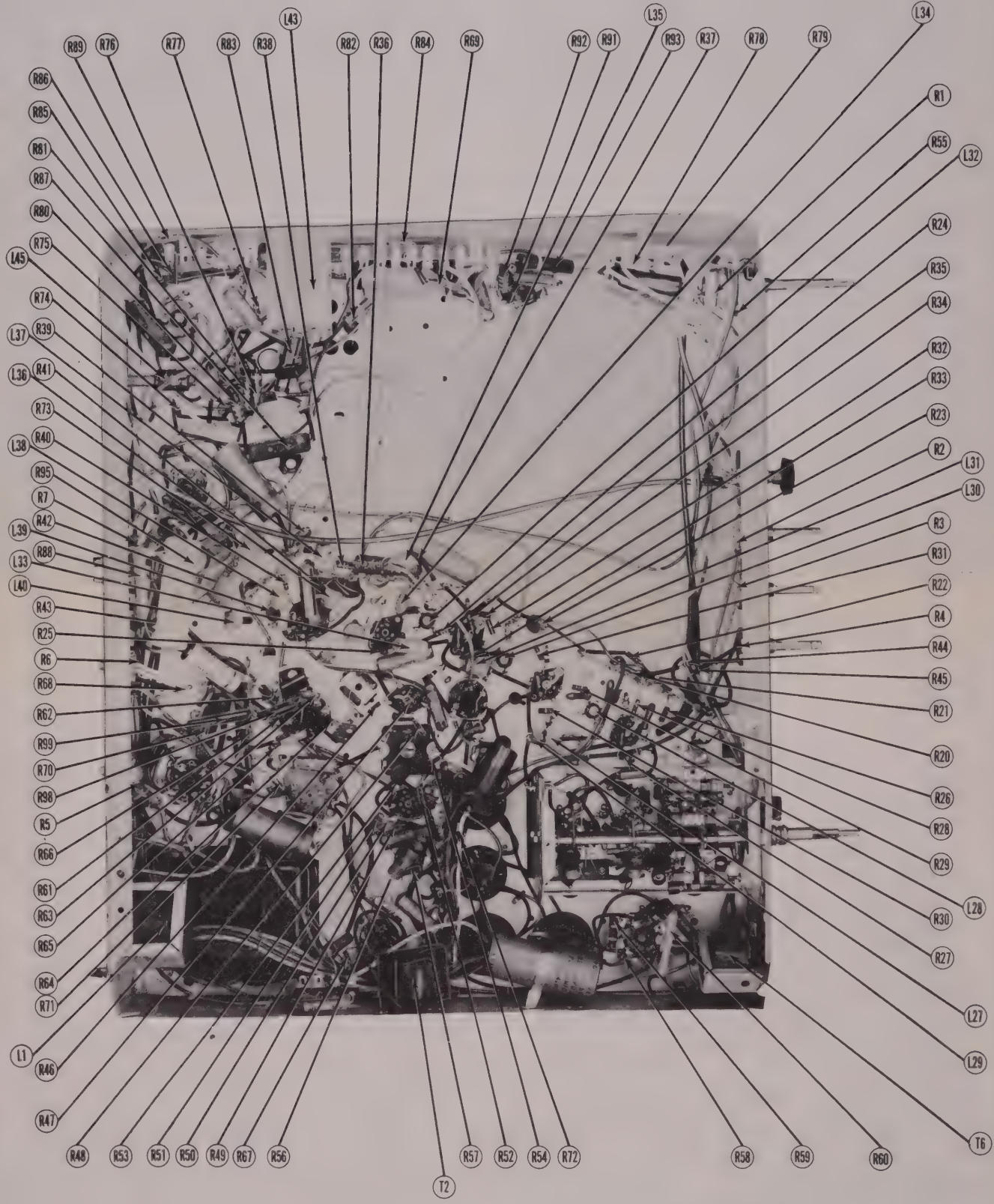
† Parallel with 22KΩ Resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			TELE-TONE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	.025			318.250		

MISCELLANEOUS

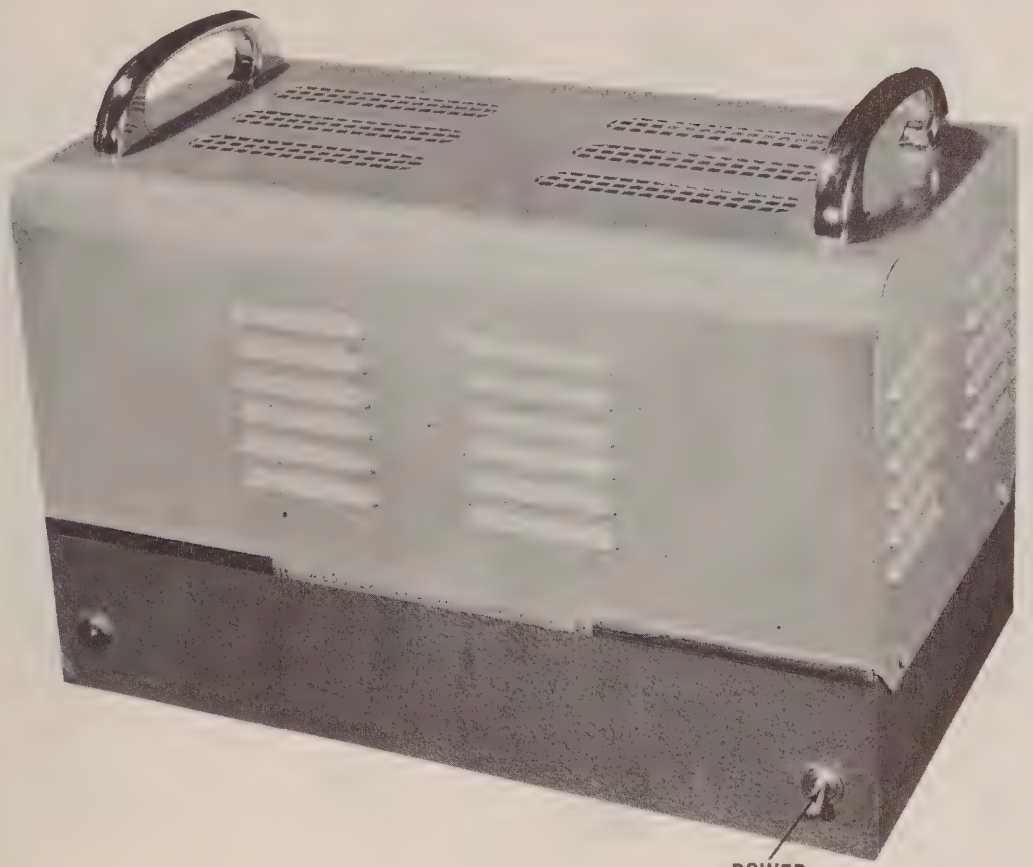
ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
M2	RF Tuner		
M3	Switch	TSW210-D	TV-Phono
M4	Switch	TSW301	Width
M5	Focus Magnet	TPM103-D	
M6	Ion Trap		
B3, B2	Trimmer	TAS541-D	(Double) Horiz. Lock 4-70MMF Horiz. Drive 10-16MMF
	Glass	TGL-172-D	Panel -TV-365 and 335
	Glass	TGL174-3-D	Panel-TV-357
	Glass	TGL175-D	Panel-TV-360
	Knob	TKN262-D	Panel-TV-355, 357, 360 and 365
	Knob	TKN257-D	Fine Tuning TV-355, 357, 360 and 365
	Knob	TKN260-D	Off/on-Volume TV-355, 357, 360 and 365
	Knob	TKN265-D	Contrast
	Knob		
	Knob		



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

WEBSTER ELECTRIC
MODEL 84-25

WEBSTER ELECTRIC
MODEL 84-25



WEBSTER ELECTRIC
MODEL 84-25

TRADE NAME	Webster Electric, Model 84-25
MANUFACTURER	Webster Electric, Racine, Wisconsin
TYPE SET	AC Operated Audio Booster Amplifier for Use with Model 82-25 and 83-25
TUBES (THREE)	Types (2) 6L6G Power Output, 5Z3 Rectifier
POWER SUPPLY	110-120 Volts AC RATING 1 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

WEBSTER ELECTRIC
MODEL 84-25

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Webster Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	6L6G	6L6G	7AC	
V2	Power Output	6L6G	6L6G	7AC	
V3	Rectifier	5Z3	5Z3	4C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Webster Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	30	500		G500/30		WR-30			Filter
C2	8	450		GL475/8		KR508		PLS-8	Decoupling
C3	50	100		GLS100/50		KR530			Output Cathode

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Webster Electric PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R1	750KΩ	½			Output Grid
R2	750KΩ	½			Output Grid
R3	225Ω	5		1 3/4A-225	Output Cathode-Wire Wound
R4	1500Ω	10		1 3/4A-1500	Filter-Wire Wound
R5	10KΩ	25		2 ½DA-10K	Bleeder-Wire Wound
R6	10Ω	½		BW-½-10	Series Pilot Light

TRANSFORMER (POWER)

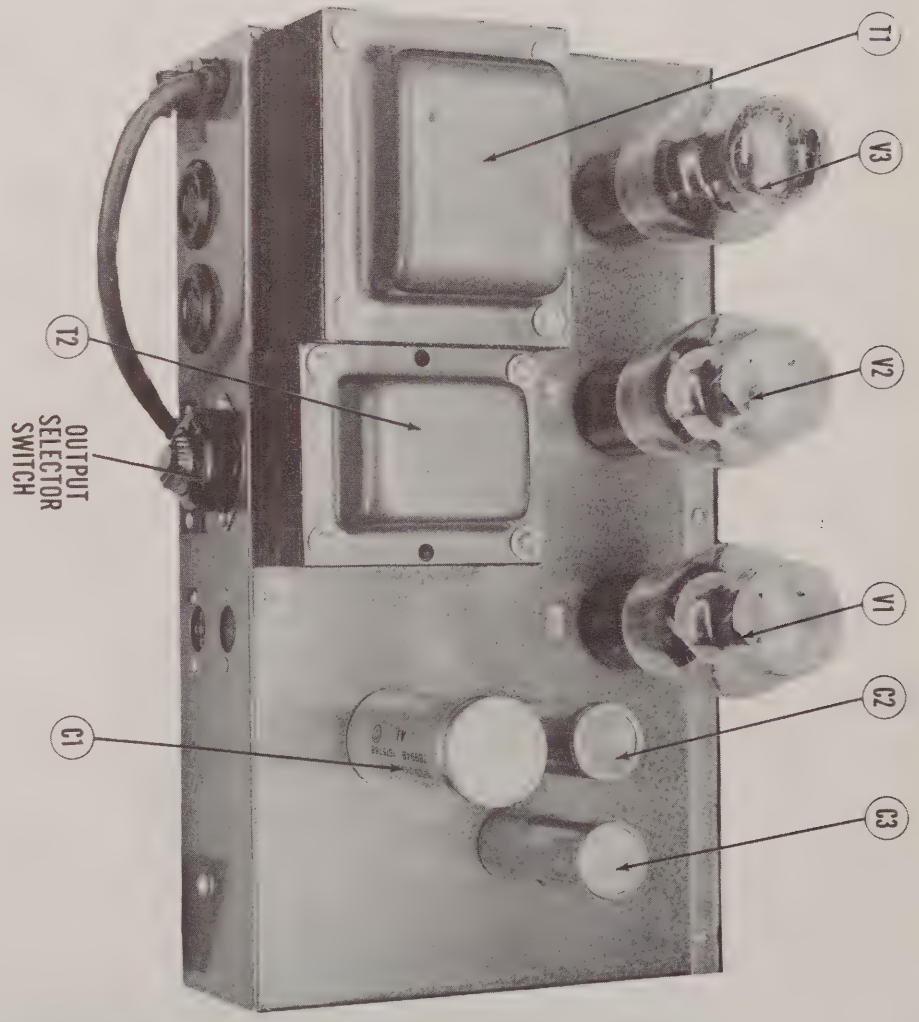
ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Webster Electric PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ②1.05A	640VCT ②.150	5VAC ② 3A	6.3VAC ② 2.3A		PM8411 ③	P-3072 ①	PH-120B

① Drill new mounting holes.
② Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Webster Electric PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	3.7KΩ	2Ω 4Ω 8Ω 16Ω 250 500	175Ω CT	.2Ω .3Ω .5Ω .7Ω 8Ω 13Ω	212-14421		A-3129②		② Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			WEBSTER ELECTRIC PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	2A			312002	342001	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Webster Electric PART No.		
M2	Bayonet	6-8	.15	Brown			Type number 47.

MISCELLANEOUS

ITEM No.	PART NAME	Webster Electric PART No.	NOTES
M3	Switch		On-Off
M4	Switch		Output Impedance Selector

1. Location: The several amplifiers may be grouped in either of two ways: with the parent amplifier to the left (as you face them) and the boosters strung out to the right, or in a stacked or shelf arrangement with the parent amplifier at either top or bottom. When Model 83-25 is used as the parent amplifier care must be taken to keep devices which generate A.C. fields away from the left hand or input end. Included in this category would be radios, motors, and transformers.

2. Inter-connection: To join all the inputs, take one of the 3-conductor cables provided and plug one end into the 3-prong socket on back of the parent amplifier and the other end into one of the 3-prong sockets on the booster. If a second (and third) booster are used, connect another such cable from the first booster to the second, etc. Polarity is correctly maintained by the polarized plugs. Using the 2-wire cable supplied, connect all the outputs in parallel at the screw terminals located just below the rotary tap switch. Proper phasing must be observed here so connect the blacks to all left hand terminals.

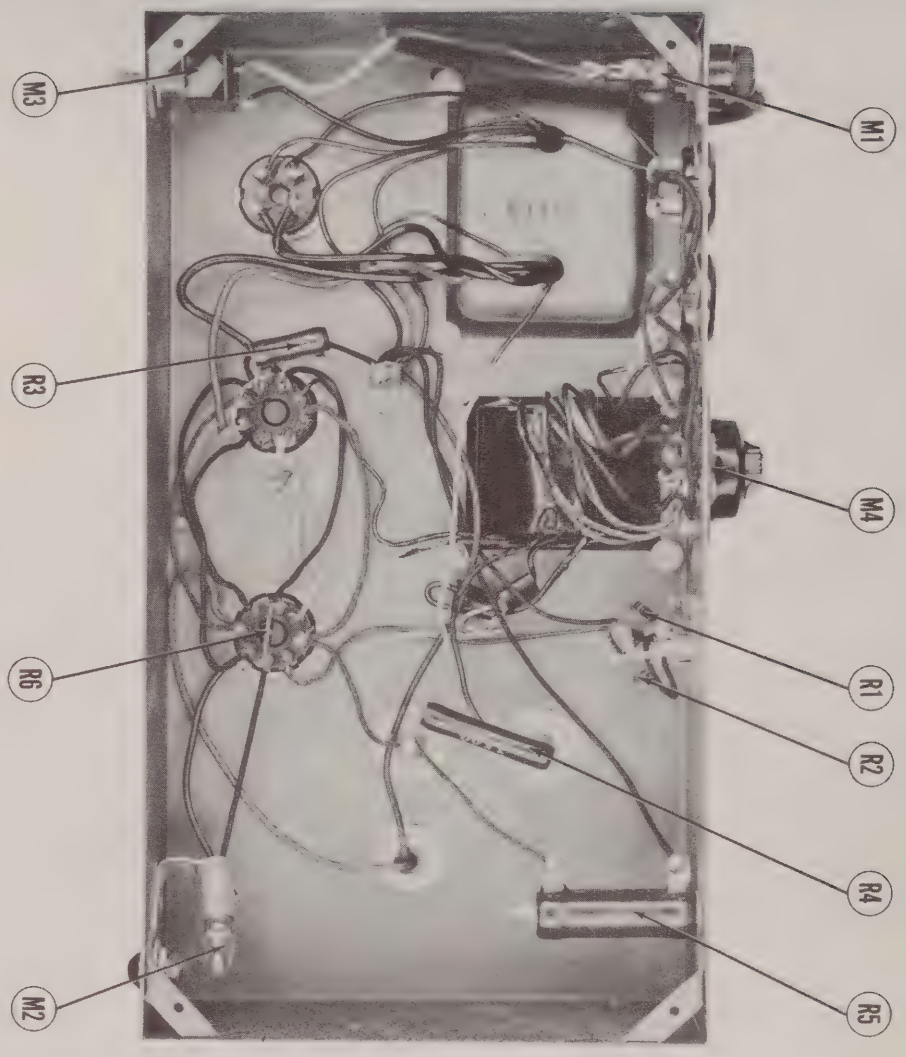
3. Output Connections: When the outputs of 2 or more amplifiers are connected in parallel the available output Power is increased while the output Voltage remains the same. This simply lets us use more speakers of the same types or impedance as were used with the single amplifier.

   WHEN CONNECTING BOOSTER AMPLIFIERS IT IS ESSENTIAL THAT ALL AMPLIFIERS IN THE GROUP HAVE THEIR OUTPUT TAP SWITCHES SET TO THE SAME VALUE.

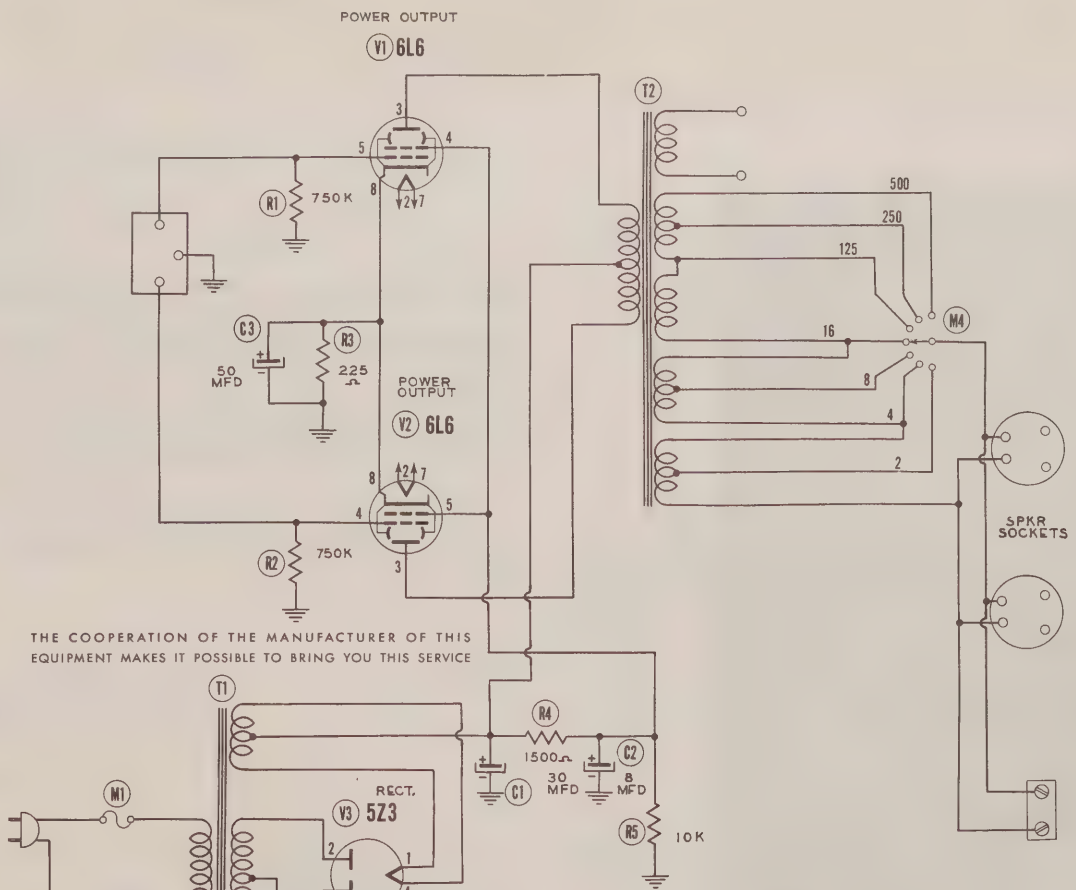
   A permanent output line may be connected at the screw terminals, or a number of portable speakers may be plugged into the 4-prong speaker sockets; four on the back of parent amplifier and two on each booster. Remember that all of these sockets are now wired in parallel so there is no need (or means) of distributing the load over the several units.

   The resulting load impedance for the group of amplifiers will be the value of the tap switch setting divided by the number of amplifiers. For example: a system consisting of an 82-25 and three 84-25 amplifiers has all output taps set on 8 (Ohms). The resulting load impedance is 8/4=2 would constitute a matched load for this system.

CHASSIS—BOTTOM VIEW



WEBSTER ELECTRIC MODEL 84-25



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6L6G	0V	¶0V	360VDC	310VDC	0V	1.6VAC	¶6.3VAC	22VDC
V 2	6L6G	0V	¶0V	360VDC	310VDC	0V	0V	¶6.3VAC	22VDC
V 3	5Z3	360VDC	315VAC	315VAC	360VDC				

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6L6G	0Ω	¶0Ω	†85Ω	†1.5KΩ	750KΩ	7.5 Ω	¶.1	225Ω
V 2	6L6G	0Ω	¶0Ω	†75Ω	†1.5KΩ	750KΩ	Inf.	.¶.1	225Ω
V 3	5Z3	11KΩ	51Ω	47Ω	11KΩ				

† MEASURED FROM PIN 1 OF V3.
¶ MEASURED FROM PIN 2 OF V1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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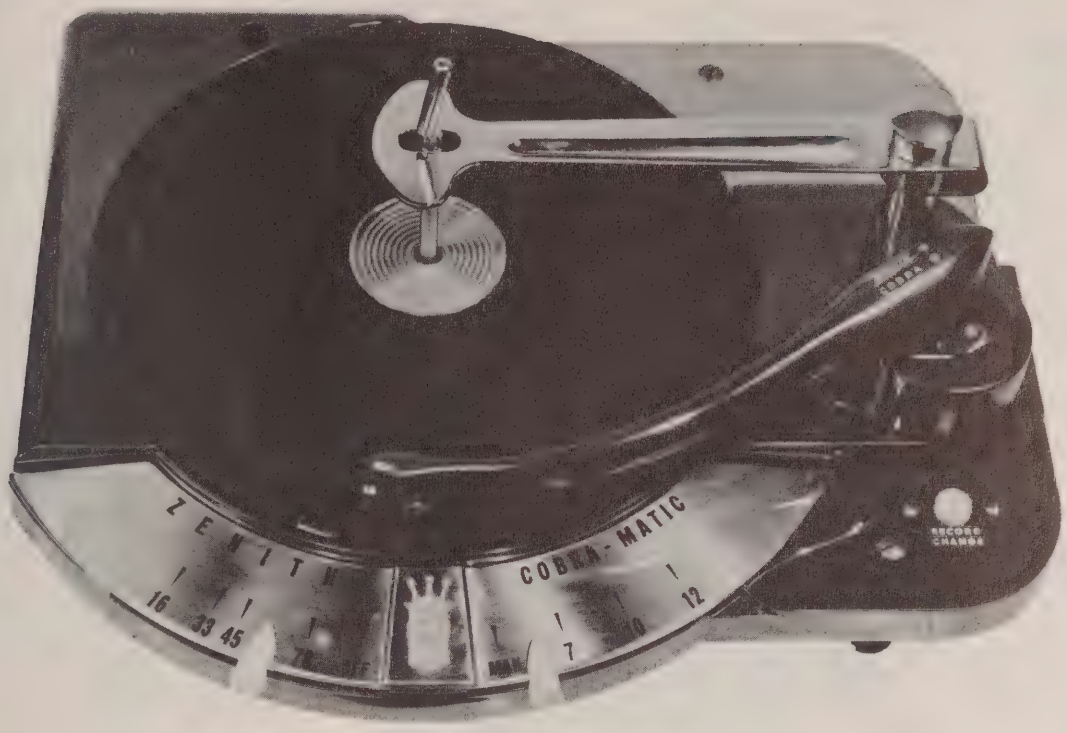
145-12

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Proper output load connected.



ZENITH
MODELS S-14028, S-14029,
S-14030, S-14031, S-14036

ZENITH
MODELS S-14028, S-14029,
S-14030, S-14031, S-14036

GENERAL INFORMATION

The Zenith Models S-14028, S-14029, S-14030, S-14031, and S-14036 Record Changers are designed to play 78, 45, and 33-1/3, RPM records. These changers will play and automatically change as many as ten 12" or ten 10" records at a single loading, at the speed of 33-1/3 "Long Play" or 78 RPM "Standard" records.

NOTE: 10" and 12" records of the same type cannot be intermixed.

A full stack of 7" 33-1/3, or a full stack of 7" 45 RPM records (with the adapter inserted in the records) can also be played on these changers. The last record will continue to play until the changer is turned off.

With a few minor exceptions, these five changers are electrically alike. The basic changer for S-14029, S-14030, and S-14031 is the S-14028. The determining factor for Models S-14029, S-14030, and S-14031 is the addition of cable assemblies for tone arm and AC connections. The only differences in these cables are the lead length and the plugs.

The S-14036 Record Changer is basically identical to the S-14028, except it uses a 50-60-cycle motor and is used primarily for the export market. The other differences are the tone arm and the AC connecting cables.

Connect these changers only to an outlet supplying 117 volts, 60 cycles AC, unless otherwise specified. Power consumption is 25 watts.

Manufactured by: Zenith Radio Corporation
6001 Dickens Avenue, Chicago 39, Illinois

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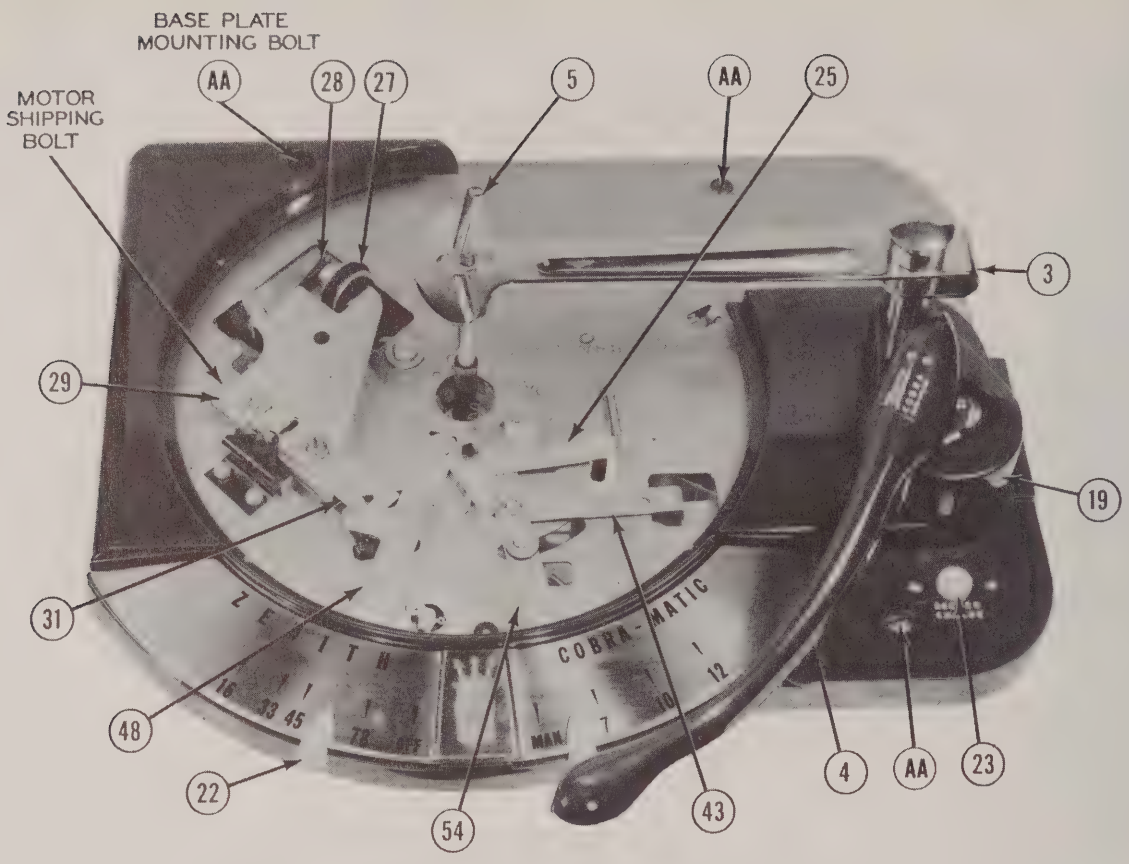


Figure 2

PREPARING FOR OPERATION

Shipping Bolts -

Before placing the changer in operation, the machine must be floated freely on the mounting springs. During shipping, the changer is secured to the changer base pan by means of three mounting bolts (see Figure 2). To float the changer, turn these bolts in until they are flush with the base plate. The motor and motor mounting plate are also bolted to the changer base plate. This prevents the motor drive shaft from contacting the rubber surface of the drive wheel assembly (70), and avoids a possibility of damage to the drive wheel assembly during shipping. Before the changer can be operated, the motor mounting screw must be removed. This motor mounting screw is located on the base plate and to the left of the idler wheel bracket and shaft assembly (29), as indicated by the arrow shown on Figure 2.

Loading the Record Changer -

1. Pull straight up on the record pressure arm knob (1) until the pressure arm (3) clears the spindle. Then swing the pressure arm to the right until the pin in the pressure arm shaft drops into the locating slot on the housing (44).

2. Place as many as ten 12" or 10" 78 or 33-1/3 RPM records, or ten 7" 33-1/3 or 45 RPM records, on the spindle and lower them to the offset shelf. Level records and replace the record pressure arm (3) over spindle; then lower the arm until it rests on the top of the record stack.

To Play Standard 78 RPM Records -

1. Move the motor speed control (48) from the "Off" position to "78." This turns the motor switch (100) on, causing the turntable to rotate, and sets the record changer for proper speed.

2. Move the set-up lever (54) to "7," "10," or "12," depending on the size records to be played.

3. Depress the record change button (23). The changer will now play the entire stack of records automatically and will continue to play the last record until the speed change lever (48) is moved to the "Off" position.

To Play 33-1/3 RPM Records -

1. Move speed control lever (48) to "33" position.

2. Move the set-up lever (54) to "7," "10," or "12" position, depending on size record being played.

3. Depress the record change button.

To Play Fine-Groove 45 RPM Records -

1. Set the speed control lever (48) at "45" position.

2. Move the set-up lever (54) to "7" position.

NOTE: It is essential that a record adapter be inserted into each 45 RPM record to reduce the spindle hole to conventional size.

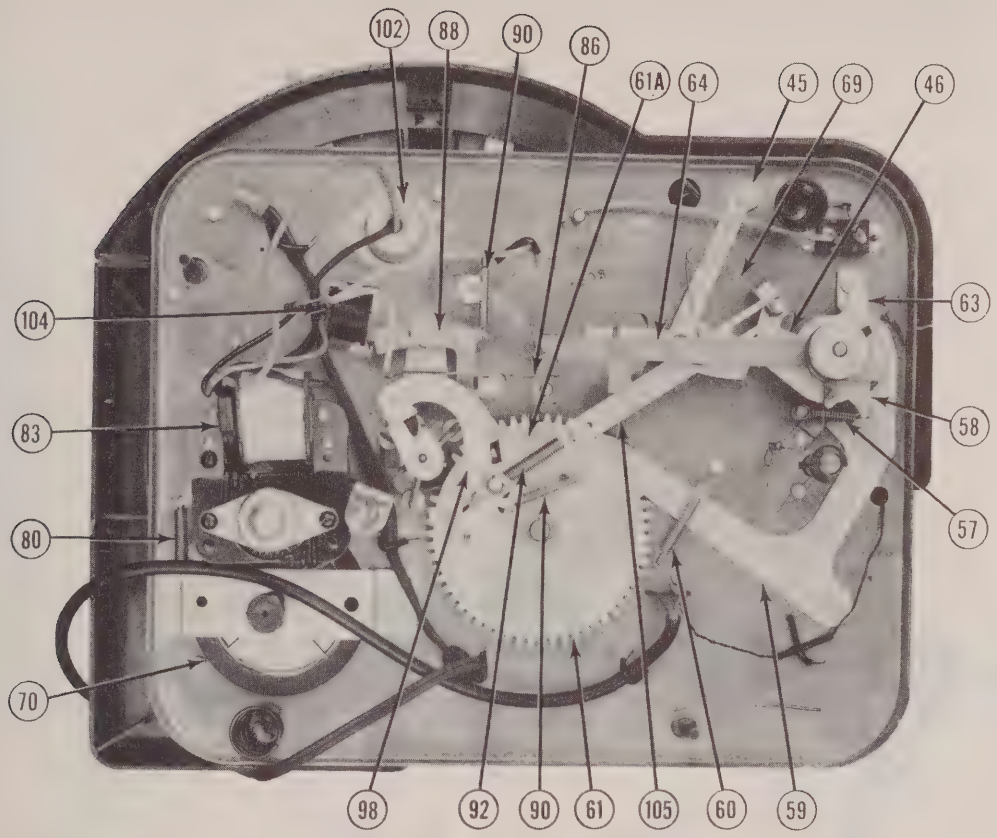


Figure 3

3. Depress the record change button (23).

Rejecting a Record -

A record may be rejected at any time, while it is being played, by depressing the record change button (23).

To Stop the Changer -

To stop the changer, move the speed control knob (48) to the "Off" position.

NOTE: Do not stop the changer during a change cycle.

Unloading -

1. Move the tone arm outward to clear the records.

2. Lift record pressure arm (3) and swing it to the right until the pin in the shaft engages the notch on pressure arm shaft housing (44).

3. Lift the stack of records straight up the spindle.

Manual Operation -

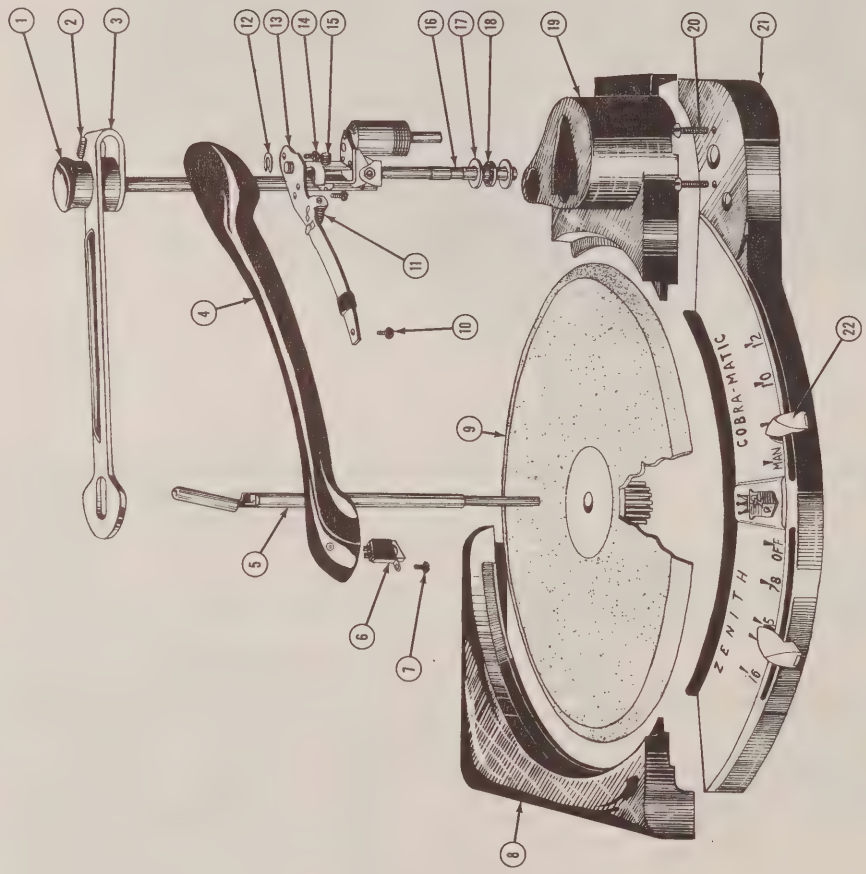
To play single records or home recordings, raise the pressure arm (3) and swing it to the right. Place the record on the spindle and lower to the spindle shelf. Gently work the record over the spindle shelf and lower to the turntable. Move the set-up lever (54) to "Manual." Move the speed change lever (48) to proper setting for type record being played.

CAUTION: When changing needles, be certain that only a "Red-Green" cartridge is used - S-15780. This will accommodate 78, 45, and 33-1/3 RPM records.

CHANGE CYCLE

The motor tension spring (80) holds the motor shaft against the drive wheel (70). This frictional contact causes the drive wheel to rotate. The drive wheel assembly (70) then drives the idler wheel (27). The underside of the turntable is resting on the idler wheel (27) and is driven in this same manner. The speed of the turntable is determined by the position of the idler wheel (27) on the drive wheel. When the idler wheel is moved to the center of the drive wheel (70) by the speed change lever (48), the idler wheel will rotate more slowly than when moved to the outer edge of the drive wheel. In this manner, the turntable can be driven at any speed from 10 to 85 RPM. Minor adjustments for proper tonal pitch can be made by simply moving the speed change lever (48) back and forth to compensate for turntable speed, which may vary due to line voltage changes.

The change cycle may be put into operation by either depressing the "Reject" or "Record Change" button energizing the solenoid (104) which attracts the trip pawl assembly (88). The same thing occurs when the forward movement of the tone arm causes the friction lever and weight assembly (64) to touch the copper bronze contact on the trip switch assembly (86). When solenoid attracts the trip pawl assembly (88), it releases the gear segment (61A) (see Figure 3). The gear segment (61A) is then pulled into engagement with the rotat-


1
2
3
12
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16
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22
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COBRA-MATIC
MAN
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ZENITH
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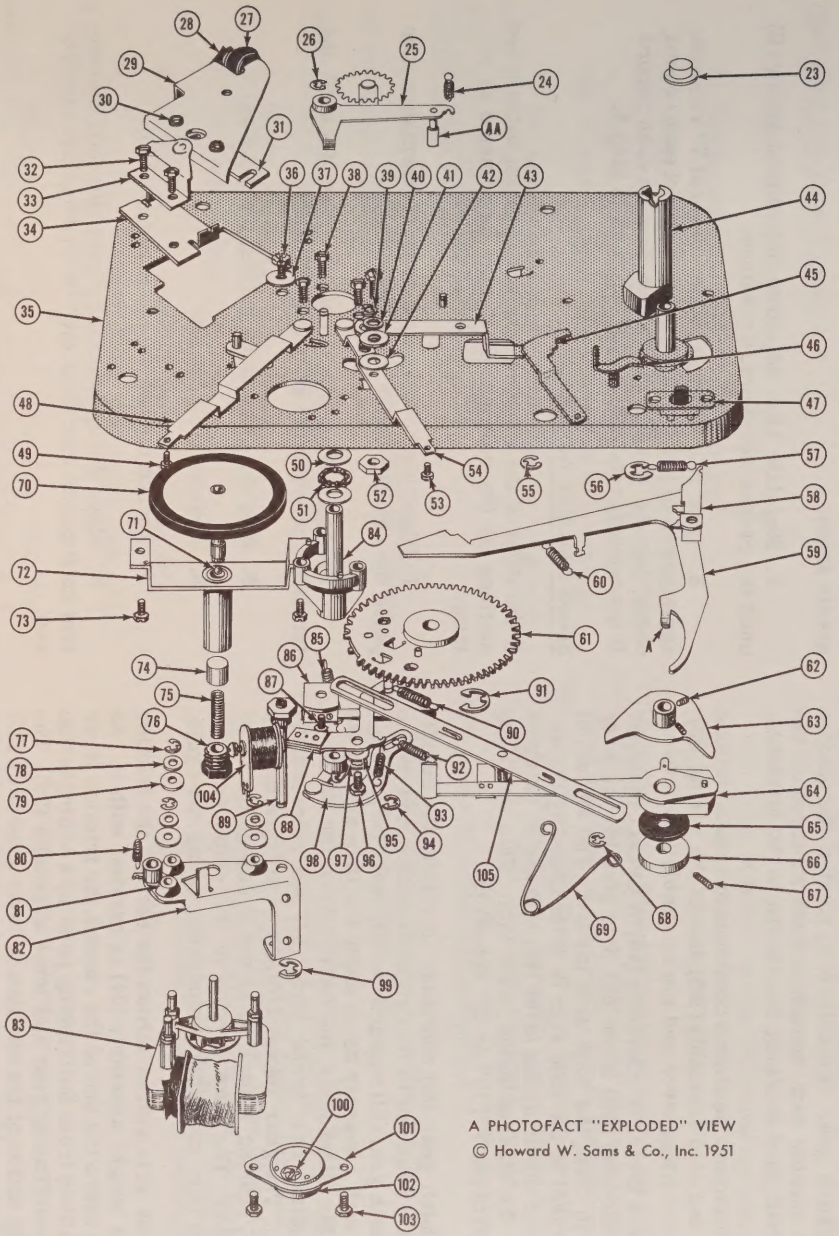

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ing turntable pinion gear by the gear segment pawl spring (90). This engagement causes the clutch gear assembly (61) to rotate.

As the clutch gear assembly (61) rotates, the tone arm lift lever (59) moves off the pin on the clutch gear (61) and is pulled in by the lift lever tension spring (60). This causes the hooked end of the lift lever (59) to engage the tone arm shaft (16), which, in turn, raises the tone arm from the record. Also, at the same time, Finger (A) of the lift lever (59) moves away from the brake lever (58), allowing it to engage the tone arm lever and bushing assembly (63). This keeps the tone arm from moving erratically during the change cycle. At the same time the tone arm link and stud assembly (105) slides outward, the pin of the actuating lever (46) is moved against one of the fingers of the tone arm lever (63), thus moving the tone arm out to clear the records.

The ejector lever and link assembly (98), being actuated by the clutch gear assembly (61), rotates the spindle shaft and ejector cam enough to push a record off the spindle shelf, thus dropping the record to the turntable.

As the clutch gear assembly continues to rotate, the tone arm link and stud assembly (105), due to the spring (92), pulls the actuating lever and pin assembly (46) inward. This causes the pin of assembly (46) to contact the other finger of the tone arm lever (63), thus pivoting the lever (63) and, in turn, the tone arm inward. The amount of inward travel of the tone arm is determined by the engagement of the actuating lever (46) with one of the three steps on the discriminator lever (45). This positions the tone arm for 7", 10" or 12" set-down.

As the clutch gear (61) continues to rotate, the spindle assembly is returned to its original position, and the pin on the clutch gear (61) engages the lift lever (59), swinging it in such a manner as to lower the tone arm to the record. Simultaneously, the finger (A) on the lift lever pushed against the brake lever (58) and releases the tone arm. The gear segment (61A) now engages the trip pawl (88), pushing it back so as not to engage the turntable pinion. The open section of the clutch gear (61) now faces the turntable pinion, completing the cycle.

As the tone arm moves across the record, the friction lever and weight assembly (64) is carried with it. As tone arm nears the end of the record, the friction lever is pushed away from the tripping point by a wiping action from the oscillating gear and lever assembly (25). The oscillating action of the oscillating lever assembly (25) is produced by the eccentric motion of the oscillating gear, which is driven by the pinion gear on the lower portion of the turntable. This repeated action of the oscillating lever (25) keeps the friction lever and weight assembly (64) from coming in contact with the copper-bronze strip on the trip switch assembly (86) as the tone arm moves slowly toward the eccentric cycling groove of the record. However, when the tone arm enters the fast lead-in groove, the friction lever and weight assembly (64) is moved forward fast enough for the friction lever to engage the copper-bronze trip contact on the trip switch assembly (86), grounding it and making a complete circuit. This actuates the solenoid (104) and starts a new change cycle.

ADJUSTMENTS

Height Adjustment -

The tone arm should be adjusted so that it will clear a full stack of 12 records on the turntable, and, at the same time, clear the underneath side of records resting on the spindle shelf. The adjustment is made by regulating the height adjustment screw (15).

Set-Down Adjustment -

To adjust the tone arm for proper set-down on the record:

1. Place a 7" record on the turntable.

2. Move the set-up change lever (54) to the 7" position.

3. Release the gear segment (61A) (see Figure 3) so that it will engage the pinion on the turntable.

4. Rotate the turntable clockwise, by hand, until the needle lands on the record. Watch closely where the needle lands.

5. Regulate the set-down adjustment screw (11) until the proper set-down is obtained.

6. Load the changer with several 7" records; apply power to the changer, and then reject each record, observing the landing of the tone arm on each record. If necessary, readjust the set-down as in Step 5.

Speed Indicator Adjustment -

If the RPM of the changer does not conform to the speed settings on the escutcheon, it may be adjusted as follows:

1. Place a stroboscopic disc on the turntable; then place the changer under a 60-cycle light.

2. Adjust the speed change lever (48) until the turntable is revolving at exactly 78 RPM.

3. Stop the changer by pulling the AC plug.

4. Remove the turntable.

5. Loosen the two adjusting screws (30).

6. Move the speed change lever (48) until the control knob points exactly at the "78" mark on the escutcheon.

7. Retighten the screws (30).

8. Replace the turntable and stroboscopic disc; then recheck the adjustment.

Trip Contact Adjustment -

For proper automatic rejecting, the silver contact on the trip switch assembly (86) should be in proper relation to silver contact on the friction lever (64). The adjustment should be made with the record changer resting on the side nearest the idler wheel and trip assembly. The turntable should be rotated sufficiently to move the oscillating lever (25) stud (AA) to its maximum upward travel. The distance between the silver contact on the friction lever (64) and the silver contact on the trip switch (86) should be 1/16". If the distance is greater or less than 1/16", the support for the copper bronze strip on the trip switch assembly (86) should be bent until this 1/16" gap is attained.

TROUBLES

Tone Arm Does Not Clear a Full Stack of Records on the Turntable or Hits Record Resting on Spindle Shelf -

1. Tone Arm Height Adjustment Incorrect:

(a) See "Height Adjustment"

Tone Arm Falls Off Record -

1. Check the tone arm set-down adjustment:

(a) See "Tone Arm Set-Down Varies"

2. Check the tone arm pivot bracket to see if it is binding.

3. Changer not level.

Tone Arm Set-Down Varies -

1. Tone arm pivots loose.

2. Brake spring (57) loose or missing:

(a) If the brake spring (57) is not connected properly, the brake (58) will not be held against the bushing on the tone arm lever (63), thus allowing the tone arm to vary somewhat in set-down.

3. Set screws (62) loose, allowing the tone arm lever (63) to slip on the tone arm shaft.

Tone Arm Fails to Raise During the Change Cycle -

1. The lift lever tension spring (60) loose, thereby not actuating the lift lever (59).

Needle Does Not Track Across Record Properly -

1. Needle may be bent or broken:

(a) Replace needle.

2. Clean foreign material from around needle.

3. Check the lateral movement of the tone arm. It must move freely without binding.

4. Excessive vibration while playing Long Play records will cause the tone arm to glide across the record.

Changer Continues to Cycle -

1. Trip pawl (88) sticks in reject position:

(a) Check the trip pawl (88) to see if it returns to its normal position after being actuated by solenoid (104).

2. Trip lever spring (93) loose, thereby not returning the trip pawl to its proper position.

3. Trip switch (86) may be out of adjustment:

(a) See "Trip Contact Adjustment"

Tone Arm Does Not Move Horizontally -

1. Lift lever spring (60) loose or missing, thereby not actuating the lift lever (59) during the change cycle.

2. Tone arm toggle spring (69) broken, loose or missing. If this is true, the actuating lever and stud (46) will not be moved when the link assembly (105) is pushed outward during the change cycle.

Changer Will Not Cycle Upon Completion of Records -

1. Be certain the record being played has an eccentric center groove.

2. The gear segment pawl spring (90) is loose or missing, resulting in the segment not being actuated when released by the trip pawl (88).

3. Check the entire velocity trip mechanism to see if it is functioning properly.

4. Faulty wiring.

Changer Fails to Complete Change Cycle -

1. Check for parts binding.

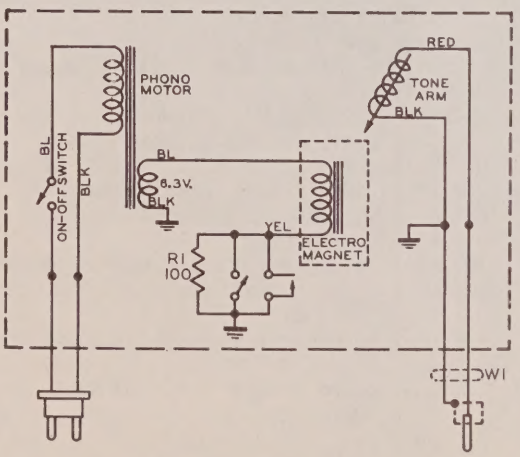
2. Tone arm link spring (92) loose or missing.

LUBRICATION

This changer has been lubricated at time of manufacture and should require no further attention for a long period of time; however, if necessary, due to excessive use or high-operating temperatures, the changer should be lubricated as follows: All shoulder rivets which hold moving parts, all stud shoulder mounting points on which moving parts operate, and all "C" washers should be lubricated with a fine instrument oil.

All other sliding surfaces and points of contact should be lubricated with a good grease.

NOTE: Do not, under any circumstances, allow oil or grease to come in contact with the motor drive shaft rubber surfaces of the drive wheel (70) and idler wheel (27), or the underneath surface of the turntable. If oil or grease comes in contact with these surfaces, clean with carbon tetrachloride.



Wiring Diagram

PARTS LIST

Ref. No.	Part No.	Description
1	46-865	Record Shaft Knob (Gold)
2	73-123	8-32xl/4" Allen Head Set Screw
3	S-16927	Pressure Arm and Shaft Assembly
4	148-125	Cobra Tone Arm Only
5	S-17424	Spindle Assembly (Complete)
6	12-1658	Cartridge Retaining Bracket
6A	S-15780	Red-Green Cobra Cartridge
7	112-573	No. 2-32xl/4" R.H.S.T. (Cartridge Bracket Mounting Screw)
8	43-189	Decorative Housing
9	S-16930	Turntable (Complete)
10	112-619	No. 2-32x5/16" R.H.S.T.(3 used to Mount Hinge Plate)
11	80-609	Landing Adjustment Spring
12		Retaining Ring
13	S-16986	Tone Arm Hinge Plate and Bracket Assembly
14	112-619	No. 2-32x5/16" R.H.S.T. (3 used to Mount Hinge Plate)
15	69-262	8-32xl/2" Phill. R.H.M.S. Tone Arm Height Adjustment
16	S-16907	Tone Arm Shaft Assembly
17	93-1071	Bearing Washer (2 used)
18	6-64	Tone Arm Bearing
19	43-187	Record Post Housing
20	112-805	4-40xl/2" Truss Head W.S. Steel Screw
21	43-188	Front Housing
22	46-867	Speed & Record Size Control Knobs (2 used)
23	46-866	Reject Switch Knob
24	80-582	Trip Lever Spring (2 used)
25	S-16918	Oscillating Gear and Lever Assembly
26	188-128	"C" Washer
27	S-16921	Idler Wheel Assembly
28	80-810	Idler Wheel Spring
29	S-16919	Idler Wheel Bracket and Shaft Assembly
30	114-347	No. 8-32x3/8" Hex Head Screw
31	57-1649	Speed Adjustment Plate
32	114-217	No. 8xl/4" Hex Head Slotted Self-Tapping
33	80-808	Idler Bracket Retaining Spring
34	12-1742	Guide Bracket (Idler Wheel)
35		Baseplate
36	114-345	10-32x3/8" Hex Hd. Slotted Machine Screw Steel
37		Flat Washer
38	114-348	8-32x5/16" Hex Hd. Self-Tapping Screw
39	114-348	"C" Washer to Mount Set-Up Link
40		Internal Teeth-Lockwasher
41	93-968	.046 Thick x .171 I.D. x 1/2" O.D. Steel Washer (used on Item 52)
42	93-784	Spring Washer (used in Item 52)
43	118-58	Set-Up Link
44	199-134	Record Pressure Arm Shaft Sleeve
45	S-16900	Discriminator Lever and Stud Assembly
46	S-16903	Actuating Lever and Pin Assembly
47	85-483	Reject Switch
48	S-16901	Speed Change Lever and Stud Assembly
49	112-806	#4 x 3/8" Binding Head Self-Tapping Screw
50	93-1070	Bearing Washer (2 used)
51	6-59	Spindle Bearing
52	94-722	Friction Bushing
53	112-806	No. 4x3/8" Binding Head Self-Tapping Screw
54	S-16902	Set-Up Change Lever and Stud
55	188-128	"C" Washer
56	188-137	"C" Washer
57	80-809	Brake Spring
58	S-17166	Brake Lever Assembly
59	117-145	Tone Arm Lift Lever
60	80-613	Tone Arm Lift Lever Tension Spring
61	S-16912	Clutch Gear Assembly
62	73-99	8-32xl/4" Slab Head Set Screw
63	S-16908	Tone Arm Lever & Bushing Assembly
64	S-16910	Friction Lever and Weight Assembly
65	93-1055	Felt Washer
66	94-723	Friction Lever Retaining Bushing
67	73-112	8-32xl/2" Slab Head Set Screw
68	188-128	"C" Washer
69	80-813	Tone Arm Toggle Spring
70	S-16922	Drive Wheel Assembly
71	184-14	1/8" Diameter Steel Ball
72	S-16923	Drive Wheel Bracket and Bearing Assembly
73	114-217	No. 8xl/4" Hex Head Slotted Self-Tapping
74	6-61	Compression Spring Bearing
75	80-816	Compression Spring
76	112-804	Compression Spring Retaining Screw
77	188-128	"C" Washer (3 used on motor mounting)
78	93-903	Steel Washer (3 used on motor mounting)
79	93-900	Fibre Washer (3 used on motor mounting)
80	80-613	Motor Tension Spring
81	125-61	Rubber Grommet
82	S-16924	Motor Mounting Plate and Stud Assembly
83	141-129	Motor
83	141-131	Motor 50-60 Cycle Export
84	S-16913	Gear Housing and Sleeve Assembly
85	80-814	Ejector Lever Spring
86	S-16933	Trip Switch Assembly
87	114-217	No. 8xl/4" Hex Head Slotted Self-Tapping
88	S-15505	Trip Pawl Assembly
89	97-391	Motor Mounting Stud
90	80-698	Gear Segment Pawl Spring
91	188-140	"C" Washer
92	80-812	Tone Arm Link Spring
93	80-582	Trip Lever Spring
94	188-128	"C" Washer
95	93-53	1/32xll/64x3/8 Steel Washer
96	113-9	8-32xl/4" Hex Head Slotted Machine Screw
97		Lockwasher
98	S-16917	Ejector Lever and Link Assembly
99	188-131	"C" Washer
100	85-482	On-Off Switch
101	57-1650	Switch Mounting Plate
102	24-550	Switch Lead Cover
103	114-297	No. 6xl/4" Hex Head Slotted Self-Tapping Screw
104	S-13913	Magnet Coil Assembly
105	S-17391	Tone Arm Link and Stud Assembly